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CONDITION OF THE RUBBER TRADE.

THE year just closed witnessed a larger factory consumption of India-rubber in the United States than any former year, notwithstanding a generally upward tendency of prices of all the raw materials used in the industry. In consequence of the latter fact, the net result of the year's trading has been a somewhat higher level of prices at the factory. It is evident, therefore, that the legitimate demand for products of the rubber factory is growing—that an increasing number of such articles is becoming regarded as necessaries by an increasing number of people. It is evident, too, that the purchasing power of the people is being steadily maintained, if not increased, for the exports of rubber goods from the United States probably do not yet exceed 3 per cent. in value of the total products of the industry, and we are still importers of rubber goods.

It has not yet been claimed for the rubber industry, as for iron, that it is a barometer of general business conditions; it is not relatively large enough. But the well sustained demand for rubber goods for the past year cannot be regarded otherwise than as an indication of general prosperity. During the year indications of another sort have not been lacking, but it is worth nothing that those proceeded mainly from the stock exchanges, where some heavily "watered" stocks sold at a startling discount. Such declines as this, however, do not lessen the nation's wealth by one cent. They may lessen the buying capacity of this or that individual or group or class, but not of the people as a whole. Regardless of stock exchange returns, there is little doubt that during the year more people have been at work in this country than ever before, for returns as liberal in any former year, with the result that more people own their homes or have bank accounts, or have a surplus in some form. The buying of goods of every class has been liberal, and the rubber goods manufacturer has had his share in filling the general demand.

The only note of complaint to be heard in the rubber branch is that the trade of late has not afforded profits commensurate with its volume. Buying raw materials at higher prices calls for a larger investment of capital for a given output of goods, and without a corresponding advance in selling prices the manufacturer may not feel as cheerful as he might otherwise over an active condition of trade. But in an era when the prices of so many manufactured products are tending downward, people very naturally object to paying higher than the customary prices for rubber articles of everyday use, no matter for what reason an advance is asked. So while more people than ever want rubber footwear, or garden hose, or rubber belting, or what not, their demands swelling the total production of such goods, they do not want to pay more than such things cost a year ago, and part of the additional cost of production comes out of the manufacturer's profits.

At the same time, when there is a pressure to buy, as has happened during the year in some lines, the effect upon prices is more favorable, from the manufacturers' standpoint, than if it were a pressure to sell. Hence, by and large, the trade of the year, if there could be a general

showing of hands, without doubt would be voted "good," and most of those engaged in it would be content to do as well another year. Furthermore, not a few manufacturers are known to entertain the firm belief that 1904 will not suffer by comparison with 1903, so far as the rubber trade is concerned.

In printing, on another page, some expressions by representative rubber manufacturers, the views of leaders in the mechanical goods trade have been sought, on account of the great extent of this branch, and the great diversity of its products. As for the rubber boot and shoe trade, the factories have been exceptionally busy, and their product promptly distributed, but without heavier snowfalls before the end of the season dealers may find themselves with larger stocks than last year. In regard to various lines of specialties, some of the old time makers look with disfavor upon large manufacturers in other lines who take up such goods as side lines, thereby upsetting established trade conditions. Still, in every branch, the factories have kept busy, and there appears no sign of approaching inactivity. Everybody cannot make tires, of course, but the year's demand for tires promises to be so large as to keep some concerns out of the general competition, thereby giving the other concerns a freer field.

While the above remarks apply especially to the industry in the United States, the same conditions in a large measure exist in the leading rubber manufacturing countries. The world used an exceptional amount of rubber in 1903, due to the fact that more people than ever wanted rubber goods; raw materials were higher everywhere alike, and smaller profits than usual sometimes resulted. There have been no important failures in the trade. Those which have occurred in the United States cannot all be set down to poor trade conditions, and doubtless a similar assertion may be made regarding the industry abroad.

THE CONTROL OF RUBBER PRICES.

IN discussing crude rubber prices, our London contemporary found occasion recently to observe: "To our minds the influence of dealers in crude rubber has been exaggerated out of all resemblance to the real." At least no proof has ever been offered of the contention by many buyers of crude rubber for consumption that they are made to pay unduly high prices by improper manipulation of the market. It has been our observation that from time to time the conditions of trading in rubber have changed materially, and that dealers have succeeded or failed, in proportion as they have adapted themselves to circumstances over which they had no control.

One may at the same time hear the assertion that rubber prices are being controlled arbitrarily in Liverpool and in New York, according as one happens to be on one side or the other of the Atlantic. At the same time, also, a rise or fall in rubber is attributed to influences at Pará or on the continent. But this mysterious influence is always as elusive, when search is made for it, as the "rubber trust" which, according to the newspapers, has been in control of the rubber industry as far back as we can remember. There is no man living who can predict either the production or consumption of rubber twelve months, or six months, or even three months ahead, and it is as little possible to say what prices will be. If such predictions could be made with certainty, the India-rubber merchants would speedily rank with the richest men of the day.

We fail to find, however, that the profits of this trade are signally larger than in any other important branch, giving employment to men of equal business capacity. One thing to be noted is that, in proportion to the number of houses in the two branches, the manufacturers appear to continue in successful careers longer than the dealers in raw materials. For example, in a list of 45 rubber consignees at Liverpool and London printed by our contemporary seventeen years ago, only three names now appear in the trade, while of all the New York firms receiving rubber in 1881, only one is now so engaged. Did all the others make so much money in rubber that they could afford to retire? At any rate, most of the important rubber factories or two decades ago, both in England and America, are still in operation, and most of them on a larger and more prosperous scale.

To recur to the article in our contemporary, its editor appears to have encountered in the British rubber trade a feeling of distrust of reports on the raw material market, on the ground of their being apt to be controlled by "the influence" which has been engaged "in building up the crude rubber trade." It is interesting, in this connection, to note that the London *Electrical Review*, which only now and then touches upon the crude rubber situation, and which cannot reasonably be supposed to have been subsidized by "the influence" above referred to, has this to say in its issue of December 11:

> The prevailing idea that speculation on the part of a few individuals has done as much or more than anything else to run up the price may be dismissed as having very little foundation. True, there is a certain important firm of raw rubber merchants who are credited rightly or wrongly with holding stock to such an extent as to rule the market, and to render futile the efforts of competitors to control any action they may see fit to take. But whether this be so or not we are certainly not inclined to ascribe to this firm the fact that rubber reached such a high price two months ago. That the firm in question have profited by the situation can hardly be doubted; to say that they created it is, however, far too bold a statement to make. We say this not only because we lack proofs, but because there are other and good reasons to look elsewhere for the determining factor or factors. The employment of rubber has shown a continual increase, and though the output of raw rubber from the Amazonian forests has also increased, it has only been about in proportion to the demand, so that there has been no accumulation of stock to meet any sudden disparity between demand and supply. There is no need to discuss the question of any failure of supply in South America, at all events. There is plenty of rubber yet, but in order to keep the price down, it is necessary that sufficient be gathered at the time it is wanted.

While not assuming to say actually how much rubber may have been held at any time by the Liverpool house in question, we may state that, according to reports generally credited in the trade, their holdings of Pará (excluding Peruvian), in "first hands" and "second hands," on the 1st of each of ten months past, averaged about 440 tons, out of average total holdings in Liverpool of about 1040 tons,

and a total world's visible supply of Pará averaging on the 1st of each month about 3500 tons. It may occur to some people that holdings no larger than these figures indicate would hardly enable a single firm to put up the prices of rubber to every consumer in the world, for a period of several months. Another point that may be of interest is that the stocks credited to the above firm were very materially reduced before the heavy rise which culminated in September.

"HEVEA" RUBBER IN DAMP LOCATIONS.

OUR purpose in devoting considerable space in this issue to the rubber tree disease in Ceylon is not, in any way, to discourage the culture of rubber, but to further its practical development so far as the dissemination of accurate information can aid in progress. There is no planting interest known to us in which, in some locality or other, troublesome and even disastrous pests or maladies have not had to be dealt with. It would be unwise, therefore, in view of such liability in a new branch of planting, not to give the fullest publicity to the first troubles encountered. Fortunately, the government of Ceylon embraces a well conducted scientific department, the services of which have been availed of by the rubber planters in that colony at the first warning of danger, and without doubt the newly discovered disease will be held in check.

There is one point in connection with the report of Mr. Carruthers's views, on another page, which may appeal to some persons elsewhere who have had in contemplation the planting of Pará rubber (*Hevea*). He asserts that the canker which he has been engaged in studying, in plantations of *Hevea*, has a tendency to make itself apparent "rather more in damp places than on ridges and well drained places;" in other words, swampy land will tend greatly to encourage the disease. This point is especially worth emphasizing, in view of the widespread misapprehension that the Pará rubber tree is a native of marshes and swamps. Such is not at all the case, and we fear that some of the planters, say in Mexico, who have planned to devote to *Hevea* certain wet spots not suited to *Castilloa* rubber, will find this course a mistaken one.

Mr. Stanley Arden, in his valuable "Report on *Hevea Brasiliensis* in the Malay Peninsula," has collected some evidence of weight on this subject, including the testimony of Mr. Wickham, who collected the seeds for the original planting of this species in the Far East, that they came entirely from trees growing on well drained table lands in Brazil, and not from locations bordering on watercourses. It is true that the rubber gathered in the Amazon valley is derived mainly from the borders of streams, but in that country means of transportation are confined to the rivers, and the rubber gatherers at their work do not go to any great distance from points which can be reached by boats. It is true, also, that many rubber camps are flooded every year to an extent which drives the workers from the country. But this does not make marshes or swamps of the rubber districts. Even where the banks are not overflowed, the rain is so constant at certain seasons as to make the work of rubber gathering impossible. In a report on the Purús river—the principal rubber producing river in Brazil—by Mr. Steere, and quoted from in this issue, there are frequent references to the high banks, and the first rubber camp visited by him was reached by "a steep climb of perhaps 150 feet" from the water's edge, though that was in the season of high water.

There is no record of *Hevea* rubber thriving in situations where water stands habitually, either in Brazil or elsewhere, and for the most part the planting of this species in Asia has been confined to lands suitable for coffee and tea. There has been some planting, however, in wet districts, and, according to the Ceylon official scientist, these regions exhibit the greatest prevalence of the rubber canker.

RUBBER IN "FIRST HANDS."

WHEN one studies the countries which yield rubber naturally, and the conditions of life in them, it becomes easy to understand why the cost of this product remains so high as compared with most other materials in wide use. Another page of this Journal is devoted to some extracts from a recent work by a scientist who, in the study of Brazilian Indian tribes, came now and then in contact with rubber camps of the type from which is gained a great share of what we call "Pará rubber," and while this explorer has not undertaken to write a report on rubber, we feel that he has contributed to an understanding of the rubber situation by his incidental references to the subject.

There is no other class of intelligent men, of equal number, at work in any part of the world to-day, under such conditions of isolation and deprivation as the *patróns* whom Mr. Steere met on the river Purús, living on unsalted fish and wild game; in a climate where it rains every day, even in the "dry season," and in constant danger from fevers; with no other society than that of their Indian employés, who can hardly be congenial, even though "civilized and Christian," as Mr. Steere expresses it; with perhaps no communication with the outside world until the yearly floods drive everybody from the scene of their work.

The isolation of the American farmer in pioneer days was not comparable with that of the owner of a rubber camp; the one had neighbors of his own kind, the other is obliged by the nature of his work to go far away from every other camp to find fresh rubber fields. The pioneer farmer, too, was inspired by the hope of founding a home, a community, and a state, none of which things can result from the efforts of the rubber man. He may hope to grow rich some time and return to civilization—but he never does. If his shipment this year brings a good return at Manáos or Pará, he spends the money freely in relaxation after a year's drudgery; if not—and too often this is true—he begins the new year in debt to his merchant, and to the other features of a hard life, is added the dispiriting task of paying off old scores.

Of course we may say that these men are not obliged to

hunt rubber against their will, and of course people in civilized lands to whom the use of rubber brings added luxuries are not called upon for sympathy for their exiled fellowmen whose work contributes so much to their comfort. At the same time we feel that our readers will at least be interested, now and then, in such side lights on the business of collecting rubber as explorers may happen to give us, even if for no other reason than it helps to explain the high cost of the chief raw material of their industry. One other consideration is that, with the business of gathering wild rubber attended by such conditions, which it seems impossible to improve, the cultivation of the product in more favorable latitudes receives its strongest encouragement.

GREAT AND GOOD NEWS continues to come out of Colorado in regard to the marvelous wild plant, lately discovered in that state, and which is alleged to contain "good rubber, equal to the best Pará article." We learn from the able Gunnison *Champion* that "this was discovered by a man whose hunger led him to chew the roots of the weed." Our contemporary does not state whether the result was relief for the starving man, but it is evident that rubber good enough to eat must be pretty good rubber. At the same time, the taste of a famished person is not always trustworthy, and it is possible that the same individual, with a well filled stomach, would not value the Colorado rubber so highly.

THE LAST MARKED ADVANCE IN RUBBER, while it mystified even many of those best acquainted with the trade, was no cause of wonder to the able Hartford *Globe*. According to our contemporary: "Early in the year J. Pierpont Morgan took a hand in the game, and made his influence felt by an immediate and persistent rise." The "rise" in rubber being less "persistent" at this time, we must infer either that Mr. Morgan got out of "the game" all that he wanted at the time, or else that he has been no more successful than certain lesser financial magnates in an attempt to "corner" rubber. But is the *Globe* still convinced that Mr. Morgan had anything to do with the market?

THE PROSPECTUS OF ONE of the new rubber planting companies in Ceylon, in pointing out reasons for anticipating good profits, mentions the advantage which they expect to have over the shippers of rubber from Brazil, where an export duty of 23 per cent. *ad valorem* is imposed. It might have been added that there is no probability that the Brazilian rubber states will cease to levy a tax on exports within the lifetime of the Ceylon planters; it is practically their sole source of revenue to-day, and there is no present prospect of anything to take its place.

REGARDING the extra tax on rubber at Manáos for the benefit of the Banco Amazonense, the governor of the state was requested recently by the federal government to use his good offices for the abolition of the tax, and he refused on the ground that the bank is a useful institution.

RUBBER WORKS AT LITHERLAND.

THE illustration herewith represents a view of the works of the Northwestern Rubber Co., Limited, of Litherland, Liverpool—an enterprise in which American capital is interested to a certain extent, and one which is of interest to the trade in general as introducing the production of reclaimed rubber on a large scale in a new field. This plant is located on the Leeds and Liverpool canal and has also convenient shipping facilities by rail. The buildings embrace two principal structures of brick, each 240×68 feet, and respectively three and four stories in height; a power house 175×70 feet, a storehouse 100×50 feet, and two other buildings, respectively 77×44 and 100×50 feet. These dimensions are given to indicate that already the facilities possessed by the new company are extensive, and the demand for its products have kept the plant fully employed. The company own altogether sixteen acres of land, which will afford ample opportunity for any further increase of the factory. The president of the company is Mr. Arthur H. Marks, of the Diamond Rubber Co. (Akron, Ohio), and the inventor of the reclaiming process employed at Litherland. The vice president and treasurer is Mr. William Alexander Smith, vice chairman of the Byrant & May Co., match manufacturers, and director in the National Telephone Co. and a number of other British companies. The directorate includes Messrs. William B. Hardy and O. C. Barber, who are directors also in the Diamond Rubber Co., and Mr. Henry G. Wright, of William Wright & Co., rubber merchants of Liverpool. The general manager and secretary is Mr. Ernest E. Buckleton, who, although an Englishman, has a very wide acquaintance in the United States due to his connection with the trade here for several years.

RUBBER RECLAIMING WORKS AT LITHERLAND.

The mechanical equipment of the plant is very complete, and has been kept busy in supplying orders from British and Continental rubber factories.

A CORRECTION FROM MANCHESTER.

TO THE EDITOR OF THE INDIA RUBBER WORLD: We see that in your notice of the opening of our Canadian branch on page 97 in your December 1 issue, there are one or two slight inaccuracies, which we shall be glad if you will correct.

The correct name of the firm is I. Frankenburg & Sons, Limited, not Isidor Frankenburg Sons & Co., Limited, and the firm was originally established about 1866, not 1876. Moreover, we notice you say that the manufacture of leather goods has been replaced by that of electric cables. We should like to point out that we still continue our leather department, which, instead of being superseded, has gone ahead very fast. We are also now large manufacturers of rubber shoes and tennis shoes.

We thank you in anticipation for making these corrections and remain, Yours faithfully,

I. FRANKENBURG & SONS, LTD.
HERBERT STANDRING, Secretary.

Salford, Manchester, December 15, 1903.

THE RUBBER TREE DISEASE IN CEYLON.

THE question of the canker fungus in rubber (*Hevea*) was discussed at a special meeting of the Kalutara Planters' Association, at Tebuwana, in Ceylon, on October 31, which was addressed by Mr. J. B. Carruthers, the government mycologist, who for some months had been making a study of the subject. The details which follow are derived from *The Times of Ceylon*.

This disease in rubber trees in Ceylon was first discovered two years ago by a forestry official. During last summer specimens cut from rubber trees were sent to Mr. Carruthers from several districts, in some of which he found the *nectria* or canker fungus. The specimens contained *mycelium*, and on investigation by means of cultures, Mr. Carruthers found spores belonging to a species of *nectria*. Inoculations were then made on trees, this being the only way to prove the guilt of an individual parasitic fungus as the cause of any disease. *Nectria* grow on apple trees, cacao, tea, etc., and eventually affect and kill many kinds of trees.

After preliminary investigations at the botanic garden at Peradeniya, Mr. Carruthers visited fifteen or more estates—practically all the rubber plantations of any size—in the Kalutara district, with the result that it is estimated that about one tree in every 200 is affected. On the other side of the river, about 40 per cent. of the rubber trees on the Yatiporua estate and 20 per cent. of those on the Edengoda estate are affected. The canker has existed on these two estates for five years or more. The address of Mr. Carruthers ran, in part:

"Coming now to observe the aspect of the disease on trees, as a general rule the external appearances on the rubber tree are roughened and swollen places in the stem and branches. These, on cutting off the outer bark, show discolored tissue, at first a neutral tint color, and afterwards brownish and claret color. When shaved the whole of the diseased parts are shown up like an outline colored map in the lighter colored healthy tissue. When the canker fungus has been growing in such a spot for some time—I cannot definitely say how long, as this depends on physiological conditions—the fruits are produced, at first pink or whitish spores, and later round red fruits like cayenne pepper, which look, on examination under a magnifying lens, like crystallized strawberries. The structure of these red fruits is the means of identifying the fungus as a *nectria*. The canker spreads through the agency of the wind in dry weather, by water, and by insects such as red ants which carry the spores on their legs and bodies in travels over the trees. The only conditions necessary for spores to grow are damp and moisture, both of which Kalutara always has.

"As regards the general health of rubber in the district, it is good—very good, notwithstanding the dropping of leaves, drying back of young branches, and irregular deciduity in certain rubber trees. The preventive methods I would recommend are inspection by gangs of coolies, cutting out the canker, and the entire excision of affected portions, and the burning of all bark cut off and dead branches. The burning of dead branches is a most important matter. Personally speaking, I believe—though I am perhaps rather rash to speak on this matter to planters who have practical experience of these things—the best way to tackle a disease like this is not only to look out for this *nectria* canker disease, but to observe any and all diseases that may arise. With regard to the cultivation of rubber—as also in the case of other products—a regular inspection should be made during a considerable time of the year, so that the moment anything unusual is noticed in the way of disease it can be treated by simple means at the initial stage.

"As regards the time of the year for observing the disease, I think dry weather is the best. You can see it better and also observe the effect of the same. The disease is better seen in dry weather; it is much more easy to spot then than in wet weather. If you cut out a portion of your tree when the weather is damp and moist and leave a small portion of the disease in the area cut out, the fungus will struggle on and regain a foothold, but if you did that in dry weather it would completely drive out the fungus. So that there are two reasons to show that dry weather is the best for observing and for dealing with the disease.

"With regard to the applying of mixtures on diseased parts, there is no doubt that theoretically and practically it is sound, but I have reasons for not recommending this. In my experience the farmers in England and planters out here very often, if any wash is recommended, show a tendency not to carefully cut out any portion of the diseased bark, but to simply smear the bark with the mixture in a general sort of way, and the natural result is that the fungus goes on in its fell work under the wash, so that the treatment is of no avail. If you cut out the diseased portion of the bark and smear the wound with bluestone, the result would be advantageous, that is, if there is no slovenly work done with regard to rubber disease—as in the case of cacao cultivation. The Tamil cooly can be shown in a very short space of time how to spot the diseased trees. When it comes to cutting off portions of the bark in the trunk or branches there should be no hesitation. The whole of the affected portion is full of the *mycelium* of the fungus and will not produce *latex*, so that you are not damaging your tree to any extent by cutting off such portion as is affected. After operation on the affected portion the tree will go on as usual. The rubber tree, gentlemen, has a wonderful power of growing and producing new tissues.

"Too much importance cannot be attached to this gang inspection. Whenever the bark of the tree is rough, and has a larger corky layer than the average bark, I find that where you scrape the bark there is no disadvantage to the living tissues of the tree, and it seems probable that they are even stimulated by this treatment and the amount of latex increased. With regard to the production of an abnormal or corky bark it would be well to groom it and see whether there is any unhealthy tissue right behind. There is one thing that I ought to have touched on, viz., with regard to the scare raised by people which your chairman has referred to; and in this connection some people seem to be scared on observing rubber trees in some places dropping their leaves.

"This dropping of leaves, and even branches, I think is due to climatic or unforseen reasons. During the short time I was in this district I saw trees which had previously dropped their leaves and had dead branches on them recovering, producing buds, and pushing on, and I am quite certain that this *nectria* fungus was not responsible for the abnormal dropping of leaf and drying of certain branches. This is a question which I should wish to have gone into rather more fully, but you will understand that when one has something in hand to deal with, it is better to devote one's attention solely to the point in question. Therefore I have not very closely studied this question

to ascertain the exact cause for this dropping of the leaves. I have not found that any typically diseased trees had dropped their leaves nor had they dead branches. So we may take it that there is no connection between *nectria* in rubber and any abnormal dropping of leaves, or dying back of branches, which are probably due to an abnormal season or to a tree being in an unsuitable place, or, through some accidental reason, not being able to do so well as its neighbors."

In answer to questions by members Mr. Carruthers said: "Unfortunately there is a deepseated belief that, if there be any disease on a tree, the plants produced from such tree are liable to have the disease. I can assure you that this is not so. If you had a cankered tree on which a branch or branches were dead, the fruit produced on the living portions of the tree would be absolutely good for planting purposes—as good as fruit from any other tree.

"If there is *nectria* on the bark, it will not affect the root of the tree. I experimented and tried to get the canker to grow on the root, but it was of no use. *Nectria* canker affects the tissue in the bark of the tree or branch, but not the root tissue. The same applies in the case of seed. There is absolutely no fungus in seed, and plants produced from seed off diseased trees will not inherit that disease."

By Mr. Dove: Do you consider there is anything very serious in this rubber disease?

Mr. Carruthers: Not at all.

By Mr. Golledge: Do you think the tendency of the disease to make itself apparent will be greater in low lying land?

Mr. Carruthers: Rather more in damp places than on ridges and well drained places.

By Mr. Golledge: Swampy land will tend greatly to encourage the disease?

Mr. Carruthers: Yes, when once the disease has got hold of the tree.

By Mr. Tisdall: The disease can be eradicated?

Mr. Carruthers: Yes.

By Mr. Farquharson: A certain margin should be cut round the diseased portion?

Mr. Carruthers: I think two inches would be on the safe side.

A motion was adopted unanimously by those present:

That this meeting is gratified to hear that the number of rubber trees in this district affected by the canker is so extremely small, but, recognizing that this and other evils may by neglect assume serious proportions, resolves to undertake on all estates in the district the regular inspection of their trees with a view to prevention of diseases, and to treat the trees in the way recommended by the government mycologist—*i. e.*, the excision of all cankered bark and the burning of all dead and dying branches.

It is understood that the details of the nature and effect of the rubber canker will form an early issue of the "Circular" published from the royal botanic garden of Ceylon.

A RUBBER COUNTRY AND ITS PEOPLE.

AN interesting study of a region important for its production of India-rubber, but little known to the outside world, appears in a "Narrative of a Visit to Indian Tribes of the Purús River, Brazil," by Joseph Beal Steere, and published in the latest Report of the United States National Museum (Washington). The author was commissioned by the Museum to make some studies with a view to completing a series of exhibits for the Pan American Exposition at Buffalo, in 1901. He planned to visit certain Indian tribes on the lower Amazon, but at Pará he was told that these Indians were spoiled, for ethnological study, by contact with missionaries and civilization, and hence he proceded further.

It seems that no wild tribe now lives on the lower Amazon or its navigable branches. The ancient inhabitants have in most cases entirely disappeared, many tribes without doubt becoming extinct, though a few individuals may have merged with the hardier Tapuios (Tupuyan family), the civilized and Christian Indians of the Amazon. Great tracts of the country are entirely without human inhabitants, as the latter generally live in small villages and scattered cabins along the navigable streams only. Wild tribes still exist on the headwaters of the rivers, where impassable forests and dangerous rapids separate them from the traders and rubber gatherers below. There are supposed to be some wild Indians on the river Guamá, within 150 miles of Pará, but a visit to them would require a strong party and several weeks' time in ascending rapids in canoes.

Mr. Steere chose to ascend the Purús, the mouth of which he reached by two days' steaming up the Amazon from Manáos. For several hundred miles of the Purús's lower course the forests produce but little rubber and nuts, the staples of northern Brazil, and settlements are seen only at long intervals. The people seen along the stream live by chopping wood for the steamers and catching fish and turtles which are sold to the steamboat people for food. Some references to the upper Purús follow:

As we approached the mouth of the Tapauá, though to the unpracticed eye there was no change in the character of the never ending forest, the settlements of the rubber gatherers became frequent. The rubber station usually consists of a large building (the *barracón*), generally built of wood or mud and roofed with tile. The lower story serves for a salesroom and for storage, and the upper story for a home for the proprietor (*patrón*) and his family. Around the station are scattered palm thatched cabins, the homes of the rubber gatherers. Though most of the settlements are of this kind, at Canutáma and Libria [Labrea] towns of several hundred inhabitants have sprung up.

The rubber gatherers are a mixed population, chiefly Tupuio, gathered from all of the older settlements of the Amazon and led here by the hope of making money easily and quickly in the rubber business. Of late years large numbers of people [Cearenses] have come up the river from the state of Ceará on the seacoast, from which they were driven by famine caused by excessive drought.

Near the mouth of the Ituchy* the steamer stopped at the little station of San Luis de Cassyaná, the property of Coronel [Colonel] Gomez, who has made his fortune in rubber and is called the king of the Ituchy. Two steam launches for navigating the Ituchy and numbers of smaller craft anchored in front of his *barracón*, with $10,000 or $15,000 worth of rubber lying on the bank ready for shipment, were marks of his enterprise and prosperity. Several of the dugout canoes of the Paumarí Indians (Aranau family) were drawn up on the bank, the first signs of aborigines we had seen, and as our freight was carried on shore a half dozen Paumarí women came down and helped carry it to the storehouse. - - - The only man among them, after carrying a few loads up the slippery bank through the mud and rain, with the promise of a drink of rum as pay, gave it up in disgust.

Anciently these Indians were much more numerous and are said to have occupied the Purús down to near its mouth. They are now reduced to a few hundred, expert swimmers and boatmen, and living almost entirely upon fish and turtles. During

* Also Ituxy; 692 miles from the Amazon. At the junction of the rivers is the town of Labrea, mentioned above, where an electric lighting plant was erected in 1902 and waterworks were being planned. [See THE INDIA RUBBER WORLD, June 1, 1902—page 282.]

the dry season they lead a wandering life along the river from the Ituchy to the *cachoeiras* (rapids of the Purús). They go from place to place, in little dugout canoes, carrying their huts with them. In the rainy months, when the sand bars are covered with water, they retire to the lakes, where they live on rafts of dead logs tied together and floored with strips of palm wood. They are a humble, cowardly race, and live in deadly fear of their neighbors, the Hypurinás.

Two days of slow steaming brought the party to Hyutanihan * just below the rapids, and to the end of their journey. On a plateau 150 feet above the river stood a dozen palm thatched cabins of the rubber gatherers, in a clearing of several acres, now no longer cultivated. The people, patrón and all, were from Ceará, and now, as there was too much rain for rubber working, were busily engaged, some making canoes, others handsawing planks under a shed near the beach, and still others cutting wood for fuel for the steamers. As the party arrived a large tapir was being brought in, killed in the forest for food.

A trail some 25 miles in length had been cut by hunters for rubber and nuts, across to the little river Marmoreá Miri, which enters the Purús 60 miles below. Starting out on this trail Mr. Steere came to the settlement of Paulo Xavier, a patrón, with three or four rubber gatherers. He told the explorers that at the end of the trail would be found a deserted rubber station, but no canoes, and the party returned to Hyutanihan. To that station two men came next day—a Cearense and a Hypurina Indian—over the same trail, after mail (!) and food. They purchased a turtle, weighing 70 or 80 pounds, which the Indian carried home, alive and kicking, on his back. Mr. Steere walked with them to Xavier's place, mentioned above, where the three men and the turtle got into a canoe and rowed down a small stream to the Marmoreá, spending the night in a vacant *barracón* of handsawed lumber, surrounded by three or four thatched cabins, the former owner of which had failed at the rubber gathering business and gone down the river to work for someone else. The following day the party went up the Marmoreá, shortening the distance in more than one place by rowing the canoe through the forest, and avoiding the bends in the river, it being the season of high water. There were forest trees 80 feet high covered to the top with festoons of red and white morning glory (*Convolvulus*) flowers.

Just before night we came to "San João," the seat of Senhor João Nogueira and the only living rubber camp on the Marmoreá. The station was a new one, having been established but two years, but several acres were cleared along the river and planted to corn and *manihot*. The *patrón*, Senhor João, like the rest, was living in a palm thatched barrack, but was getting out timber for a better house. Several men were at work under a shed making a big canoe to transport his rubber down the Marmoreá to the Purús and market. He seemed glad to see a stranger in this remote part of the world and did his best to make my stay pleasant. My hammock was hung that I might rest after my cramped ride in the canoe, and one of the few chickens he had saved from the vampire bats was sacrificed for my supper. Several monkeys of different species were running about or were chained to the walls.

Senhor João the next day offered to guide his guest to where wild Indians could be found, and they started afoot through a deserted rubber trail, accompanied by the Cearenses, but coming to where the road was flooded they happened to meet a naked Indian paddling a little bark canoe through the woods. The four pedestrians climbed into the boat with the Indian, causing it to sink until the water came into the ends, but the boat was patched with clay and the party proceeded for several miles when they were able again to proceed on foot. In the afternoon they reached a deserted village, or rather village house, of Jamamadi Indians. Formerly it had sheltered 130 people, who maintained a considerable plantation, but all had died of black measles introduced from a visitor down the Purús. Half an hour later another Jamamadi settlement was reached, where the American and his party spent the night. Mr. Steere had in his pack an assortment of little looking glasses, bright colored handkerchiefs, and beads, which he was able to barter for a complete outfit of Indian weapons, ornaments, utensils, and household goods—articles of native use of which he was in search. There appear to be now only two or three small settlements of the Jamamadi in existence, all on the Marmoreá, their number having decreased rapidly since the coming of the rubber gatherers.

The journey back to "San João," part of which was made in the same canoe manned by the naked Indian, was made more difficult on account of the load to be carried, including a large gray monkey in a cage. Mr. Steere himself carried a bundle of arms, so long that it constantly struck the trees along the path. On the way they passed a communal house of Hypurina Indians, all of whom appeared to be away on a hunting expedition. These people are reputed cannibals and are more warlike than the Jamamadi. They do not, however, attack the white settlers, and some of them have been employed in rubber camps.

Senhor João had *estradas* open for 50 rubber gatherers, but had only 15 or 20 men employed and little chance for getting more, the station being 50 miles from even the rude settlements of the Purús. Besides, the location seemed unhealthy, and, Mr. Steere left his supply of quinine for some of the men who were suffering from fever. The above notes record practically all of Mr. Steere's contribution to the subject of the sources of rubber, the remainder of his work being devoted to his observations of Indians who have not been "spoiled" by civilized man, with studies of their language and customs, including photographic views.

* * *

THE Purús has been called the most important of the affluents of the Amazon; it certainly has been the most productive of rubber, not to mention the great quantity which comes down the Acre, from Bolivia, into the Purús and thence to Manáos. In the year ending June 30, 1903, the Purús brought over 13,000,000 pounds of rubber (exclusive of Caucho) to Manáos, counting the Bolivian product. In the calendar year 1902 the Purús brought, from Brazilian territory alone (including Caucho), nearly 11,000,000 pounds. This heavy rate of yield has been maintained for years, but only by means of the rubber gatherers constantly removing their camps further up the river, and the conditions of life show little improvement, the workers always being "pioneers" wherever they may happen to be engaged. The Purús was explored by Chandless for 1000 miles above the highest point mentioned by Mr. Steere, and it has many tributaries navigable for long distances, but through the rubber districts along those streams the same solitude prevails, except here and there where a trading station at certain seasons attracts a considerable transient population.

THE American Asbestos Co., with $1,000,000 capital and headquarters at Montreal, has been incorporated in Canada to conduct a mining business, with special reference to asbestos. The company is composed principally of Boston people, including H. M. Whitney, one of the leading capitalists of that city, who is its president. The company has acquired the Kerr asbestos mine, at Black Lake, and purposes treating the product with electricity.

* This point, according to the Baron de Marajó's "As Regioes Amazonicas," is about 805 miles above the Amazon.

SULPHUR IN ITS RELATION TO VULCANIZATION.*

OF all the materials used in the manufacture of rubber goods, Sulphur, next to Rubber itself, is not only the most interesting by reason of the great variety of states it is able to assume, but it is the one whose reactions both in the vulcanizing process and in kindred combinations should be more generally understood by manufacturers. The better manufacturers are acquainted with the characteristics of the materials used by them, the better they will be enabled to avoid mistakes, to improve the quality of their products, and, what is of the greatest importance, to more easily discover the causes of defective goods that are occasionally made even in the best conducted establishments.

It is now generally conceded that in the vulcanizing operation Rubber and Sulphur chemically unite. We have therefore as a result of this operation a Rubber sulphide, as we have Hydrogen sulphide as the result of the combination of Hydrogen and Sulphur, and Iron sulphide as the result of the union of Iron and Sulphur. The Hydrogen sulphide and the metallic sulphides may be formed by a direct union of the elements, assisted by heat, in the same way that Rubber sulphide is formed.

The velocity of the union of Sulphur with Hydrogen and the metals is increased with each increase of temperature, as is quite universally the case with chemical processes. The converse of this is also true, that with each reduction of temperature, the rate of the union of Sulphur with Hydrogen and the metals is decreased, as it is with chemical processes in general. When we once comprehend fully the nature of the formation of sulphides by the direct union of the elements, the great mystery surrounding vulcanization disappears. The production of the Rubber sulphide is a simple chemical process—the union of the rubber hydrocarbon with sulphur—brought about by the same means as the production of the other sulphides mentioned.

The velocity of many chemical processes, besides being accelerated by heat, may be accelerated by the presence of other substances which do not pass into the products of the reaction. A well known example of this is the use of Manganese peroxide in the production of Oxygen from Potassium Chlorate. Oxygen may be obtained from the Chlorate by simply heating it in a flask. But if it be mixed with Manganese peroxide in fine powder, the Oxygen is produced more freely and at a lower temperature, but the peroxide itself undergoes no change in the reaction. In like manner the union of Rubber and Sulphur in vulcanization is made to proceed both faster and at a lower temperature by adding litharge in fine powder to the compound of Rubber and Sulphur. The litharge does not pass into the products of the reaction, but it enables vulcanization, which would take place more slowly and at a higher temperature without the addition, to proceed at a greater velocity and at a lower temperature. Other substances are sometimes used in place of litharge, but perhaps none of them with so marked an effect.

As the velocity of chemical processes of all kinds rapidly increases with rising temperature and rapidly decreases with falling temperature, it would naturally follow that the production of sulphides, whether of Rubber or of Hydrogen, and the metals, can take place at lower temperatures than those at which we have been accustomed to observe them. It can accordingly be stated that vulcanization can take place at any temperature below that ordinarily employed, and above the freezing point of Rubber, if sufficient time be allowed. "We have in general no ground for supposing that any chemical process which can take place at a higher temperature cannot take place at a lower."—(*Ostwald.*)

Many of the metallic sulphides can be formed under the influence of pressure without the aid of extraneous heat. When a mixture of Sulphur in suitable proportions with Magnesium, Zinc, Iron, Cadmium, Bismuth, Lead, Silver, Tin, or Antimony in very fine powder is subjected to a great pressure, at ordinary temperature, a part of the metal is transformed into a sulphide. If the cake which is thus formed be reduced to powder and the operation be repeated a few times, the entire mass can be converted into a sulphide. Pressure therefore seems to bring about, in this instance, the same result that is brought about by increase of temperature. That is, it hastens the formation of a product that otherwise would be more slowly formed at the same temperature. May we not therefore expect that pressure will hasten the formation of the Rubber sulphide at whatever temperature it may be employed? It was formerly thought that pressure, being purely mechanical, was without influence on chemical reactions, but modern chemistry recognizes its influence on chemical processes in general.

Native Sulphur exists generally in the neighborhood of volcanoes, either in amorphous (uncrystallized) or in crystallized masses, or mingled with the earth from which it is separated by simple fusion or by sublimation. It is also emitted in the form of pure Sulphur vapor from many extinct volcanoes of which Mt. Popocatapetl is a well known example. Iron pyrites furnish quite a proportion of the Sulphur of commerce which is separated from the pyrite ores by roasting.

At Mt. Popocatapetl large quantities of Sulphur are produced. The Sulphur vapors which are emitted from the fissures at the bottom of the crater are conducted through long wooden galleries in which they crystallize or condense in beautiful masses of pure Sulphur. As this mountain is about 17,500 feet high and as the bottom of the crater can be reached only by means of a basket and rope raised and lowered about 600 feet by a windlass, the labor of transportation must be very great. But after the galleries are once placed there is no further expense attending the production of the Sulphur.

Sulphur belongs to that class of substances, called *dimorphous*, which can crystallize according to two different systems. When crystallized from solutions it assumes the form of octahedral crystals, which are of the same form and appearance as native sulphur crystals that are sometimes found very large and perfectly pure. When crystallized by slowly cooling from a melted condition, it assumes the form of oblique elongated prisms, which are usually called prismatic. The temperature at which Sulphur is crystallized usually governs the form of the crystals. If crystallized at 212° F. or over, prismatic crystals are formed. If crystallized at a low temperature the crystals are octahedral. These different forms cannot, however, in all cases, be explained by the differences in the temperatures at which they have been formed, as both forms are sometimes developed at the same time, from the same solution in carbon bisulphide, when it is allowed slowly to evaporate.

Sulphur is chiefly known in the form of Brimstone, Roll

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Sulphur, Flowers of Sulphur, Precipitated Sulphur, and Milk of Sulphur. Brimstone is the Sulphur of commerce as imported from Sicily. When Sulphur vapor is condensed in a chamber above the melting point of Sulphur, it condenses into a liquid state which, when poured into cylindrical moulds and cooled, is the ordinary Roll Sulphur, and is a mass of prismatic crystals; but if the temperature of the chamber is kept somewhat below the melting point of Sulphur, the vapor condenses in the form of a very fine powder which is Flowers of Sulphur. These belong to the amorphous or uncrystallized variety, but they gradually change to the octahedral form.

Flowers of Sulphur and Milk of Sulphur are not materially different except in appearance. Milk of Sulphur, being formed by precipitation from aqueous solutions, is so finely divided that its color appears to be white, though it is actually yellow. On account of its extreme fineness it is more subject to chemical changes.

These various forms of Sulphur differ not only in appearance but in many other respects. Their hardness and density and their melting points differ. They differ in their power of refracting light, in their behavior to solvents, and are differently acted upon by heat and by various chemical reagents, though when they enter into combination with other elements they form identical chemical products.

None of the forms of Sulphur are stable except within certain ranges of temperature. At the ordinary atmospheric temperatures all other forms are gradually changed to octahedral and at this temperature this form is the most stable. But if octahedral Sulphur be slowly heated above 205° F. it is changed to prismatic Sulphur. If octahedral Sulphur be plunged in small pieces into a bath at that temperature it melts at 239°, but if slowly heated it fuses at 248°, the melting point of prismatic Sulphur.

Above 205° F. prismatic Sulphur is the most stable, and at this temperature all the other forms are changed to it. "These relations show a very great similarity to the reciprocal transformation of ice and water, or, generally, to fusion and solidification. As in those cases, so in the present, there is a temperature above which only the one form, and below which only the other form, is stable. On passing this point, therefore, the one form passes into the other, and only at this one temperature can the two forms exist together."—(*Ostwald.*)

This point can be varied by pressure. But a very great pressure is necessary to make even a slight change. The melting point of Sulphur is also changed by pressure. But, in this case also, great pressures are required to bring the change about. Under a pressure of 519 atmosphere its melting point is raised to 275° F. Thus between 248° and 275° a pressure of 288 pounds per square inch is required to raise the melting point one degree, an amount so great as compared with the pressure used in dry air or steam vulcanization, that the effect of pressure in this respect, is of no importance in these processes. A pressure of 20 atmospheres raises the point at which octahedral Sulphur changes to prismatic, one degree. As vulcanization is generally carried on considerably above 205°, this effect of pressure may also be ignored.

Sulphur, however, has no definite melting point, but when heated gradually softens, loses its form, and passes imperceptibly into the liquid state. Prismatic Sulphur melts and resolidifies at 248°. If the temperature is raised to 290°, it resolidifies at 236°, but if heated to 338°, the point of solidification is 234°. At 248° Sulphur is a clear, limpid, light yellow liquid. But if heated somewhat above this point conversion into a peculiar allotropic modification, called Plastic Sulphur, commences. The Sulphur gradually grows more viscous until at 482° it is so thick that it cannot be poured from the vessel in which it boils at 842°, but at no subsequent temperature is it more limpid than at 248°.

From its behavior, it is inferred that melted Sulphur can assume different allotropic forms, as well as in the solid state, though it has not yet been possible to separate them or to describe their properties.

As Sulphur exists in several different forms both in the solid and in the liquid state, so in the state of vapor it exists in several different forms with different molecular weights. The constitution of Sulphur vapor continually varies with increase of temperature up to 1800°. Above this temperature, the density of the vapor remains constant at 64 (hydrogen being 1). The combining weight of Sulphur, however, being 32, the entirely dissociated molecules of the vapor must consist of two atoms of Sulphur. Sulphur in this form exists in Sulphur vapor at the temperatures used in vulcanization, though at those temperatures the proportion both depends upon the temperature and varies with it. It is in this state that Sulphur vapor combines with rubber in the vulcanizing operation.

If Mercury and Sulphur in the proper proportions be triturated together, the mixture is converted into Mercuric sulphide at ordinary temperature. So if Silver be exposed, at ordinary temperatures, near Sulphur, the result is the black Silver sulphide on the surface.

As Sulphur enters into combination only when in solution or in this state of dissociated vapor, it is evident, from the formation of Mercuric sulphide, that the entire mass of the Sulphur is not only vaporized at atmospheric temperature, but the vapor is dissociated into the form assumed when Sulphur forms combinations. It is interesting to know this fact, as it may tend to explain, by analogy, the dissociation of Sulphur, when compounded with rubber, under the influence of a very moderate temperature.

At ordinary temperatures Sulphur emits a sensible vapor. At temperatures slightly above the ordinary it can pass entirely into vapor. The vapor from a few small bags of Sulphur hung up in a grapery is sufficiently powerful to destroy the microbe or fungus that attacks the grapes. So, in the early days of the rubber manufacture, it was found that Sulphur compounded with rubber preserved it from decay, without the use of artificial heat. At 212° the vapor has a considerable tension which is rapidly increased with each increase of temperature.

As the uncombined Sulphur in vulcanized rubber is neither octahedral nor prismatic, it is evident that after the octahedral crystals have been changed at or above 205° to prismatic, there has been a further change in form.

Under the microscope, Dr. Weber says that this excess of Sulphur appears like extremely small globules. We should expect the Sulphur to take this form. Rubber, for dry heat vulcanizing, is usually compounded with Sulphur, Litharge, Whiting, besides other substances. On an average perhaps 3 per cent. of Sulphur is incorporated with the rubber and more than the weight of rubber in the other mixtures. All of these mixtures are in the finest possible powder, the particles of which can only be observed by the microscope. All of these various particles must be thoroughly incorporated with the rubber. If this operation is performed in an ideal manner, each particle of the compound will be completely enveloped in an extremely thin wall of rubber, and, theoretically at least, each particle of Sulphur will be isolated from each other particle. When this compound is slowly heated in the vulcanizing process, it seems reasonable to expect that after a temperature of 205° F. is passed, all the Sulphur not yet absorbed will be

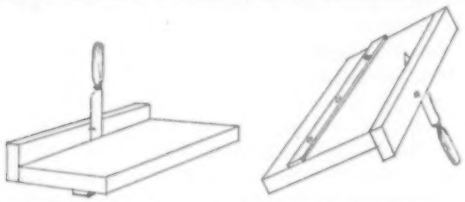
changed to prismatic Sulphur and that it will become melted at 248°. The extremely fine particles will assume the globular form as their surface tension must be very great. In the mean time vulcanization has commenced, attended with absorption of the Sulphur vapor, which is presented to the rubber in the smallest possible amounts and therefore to the largest possible surface of rubber. As the temperature of 248° is passed the rate of vulcanization rapidly increases, until the highest temperature adapted to the compound and the goods to be made is reached.

MAKING MOLDED GOODS IN RUBBER.

A GREAT variety of small molded articles in a rubber factory brings forward the necessity for rapid and inexpensive means for preparing the stock, and pressing and trimming the goods. The methods employed are not always well considered from an economical standpoint, notwithstanding their importance. A few notes on some methods actually employed may be of interest, and afford a clue for further study and development where new problems of this kind need to be worked out.

In the preparation of stock for mold work a good tubing machine is essential. By providing suitable dies stock may be rapidly run for an endless variety of shapes ready to cut into pieces of suitable size to fit the molds. One of the most satisfactory stock cutters for this purpose is a small semi circular or cam shaped blade, attached to a spindle operated by power at a lively speed. The blade is arranged to pass with a shearing action across an opening in a metal face through which the stock from the tubing machine is fed against an adjustable guide to regulate the length of the piece. In this way thousands of pieces an hour may be cut ready for the molds.

Washers and similar thin articles may be punched from a narrow strip with great exactness of weight, and with considerable speed if power is used, or a fair rate if cut by hand die. An excellent arrangement for this sort of work consists of a power press, cutting several pieces at a stroke; or with a die making one part of the cut as a hole, and the next the outside of the circle. Boot heels are easily cut by a press of this kind at the rate of 3000 per hour.



TOP AND BOTTOM VIEWS OF A SIMPLE GAGE KNIFE.

Valves and large circular work, such as gaskets, are cut by knives attached to a cross bar at the end of a vertical shaft. The stock is brought upward into contact with the knives by raising the table of the machine by foot power. Calendered slab stock $\frac{1}{16}$ inch or more in thickness may be rapidly cut in strips of any desired width by a simple gage knife made of $\frac{7}{8}$ inch spruce or pine, as shown in the figure. The wood portion consists of a board about 5 inches wide by 10 inches long; on one edge of this is fastened a strip of $\frac{7}{8}$ inch wood about 2 × 10 inches. On the opposite side a strip of $\frac{1}{4}$ inch iron $\frac{1}{4}$ inch by 10 inches is attached by three or four screws. This iron strip is adjustable by means of the screws to any desired distance from the point of the blade which is pushed through the joint of the main board and wooden back strip. The knife is held to its work by a nail or screw driven in behind it. With such a simple tool rapid and accurate work is possible in cutting strips for gaskets and similar work.

In the curing of goods it should be noted that the object of press work should be merely to shape and "set" or partly vulcanize the goods, in order to economize the time of the presses. From 10 to 20 minutes at 40 to 60 pounds of steam, according to the stock employed, is long enough in the press. The subsequent final curing can be effected by a wholesale heat in open steam. By this method the stock will have the feel of much better quality than if fully cured in the molds.

The weight of stock to make any given object should be regulated as nearly as possible to the capacity of the mold, that there may be produced the minimum amount of cured trimmings. With some very low grade goods trimming and finishing are most cheaply done by tumbling the articles in a barrel. This treatment removes all traces of the "fin" from the parting of the mold; but, of course, is only adapted to special cases. Such goods as Fuller balls and others of circular cross section are most economically trimmed by means of a small power punch forcing single pieces through a die which trims them clean as they pass rapidly through to a receptacle below. With such a trimming machine, operated by a boy, the expense of trimming need not exceed 10 cents per 1000 pieces.

In valve making it is often necessary to procure a mold quickly to fit certain odd dimensions for which no mold is at hand. This is most easily effected by springing into the circular recess of the base plate of a larger valve mold than is required, one or more rings of thin iron rolled to circular form by hand power rollers and filed on the ends to make a neat driving fit. In this way the size of a valve mold as regards both depth and diameter, may be quickly altered, and the rings if kept and properly marked, are always available for making the same size again.

Rubber molds are frequently useful, inexpensive, and durable when properly made. They are especially adapted to such goods as stair treads, door mats of corrugated design, and a variety of small mats. If carefully handled, such molds give surprisingly long service. They are generally made on a foundation of belt duck built up $\frac{5}{16}$ inch or so thick, like a slab of packing. This is well cured in the hydraulic press and then one ply is stripped out of the face the size and shape of the molded surface desired. The mat or tread pattern is cut in strips or blocks from $\frac{1}{8}$ thick cured rubber packing or corrugated matting. These shapes are carefully cemented in place where the ply has been removed. Care is always taken to leave a supporting margin of 4 or 5 inches of duck around the design. This is necessary to prevent spreading under the molding pressure. If such a mat mold is mounted on an iron plate with supporting edges, it is practically indestructible.

ONE of the leading concerns in the world for the production of apparatus for the extinction of fires is that of Merryweather & Sons, at Greenwich, in England. The founder of the present head of the business was the inventor of the fire engine which won the first prize of the Great Exhibition of 1851 in London. The works turn out practically every type of fire engine and accessory machines, and the disposition of the firm to keep up with the times is indicated by their manufacture of a hose tender and chief officer's buggy driven by a 12 HP. motor. The products of this establishment are shipped to every continent. Messrs. Merryweather & Sons continue the manufacture, on an extensive scale, of leather fire hose, which is made up to a diameter of 9 inches. They also make canvas hose and rubber lined hose, the rubber being supplied by rubber manufacturers.

PAPERS ON AIR BRAKE HOSE—II.

HOSE SPECIFICATIONS AND TESTS.

THE former general and unsatisfactory practice of purchasing air brake hose on twenty-four months guaranteed service has given way, in recent years, to the practice, by the leading railway companies, of requiring the rubber manufacturer to furnish air brake hose in accordance with specifications and prescribed tests. By this means it is hoped to secure goods better adapted to the trying conditions of service; also greater ultimate economy. The comparatively short service of air brake hose and the disasters liable to attend its failure, render extremely important the determination of the matter of the quality and make up best suited to the service required. Naturally there is much similarity in the various specifications already issued. The numerous specifications consulted in the preparation of this paper practically cover the entire field and embrace all the essential requirements.

Most of the railway authorities are inclined to impose exactions on the manufacturer which are of questionable value in securing greater service from the goods, while they unnecessarily add to the cost. For example the excessive 25 pound friction test; the vibrating test under 60 pounds air pressure; and the complicated attempt to figure quantitative relations between friction, tube, and cover. These, however, become of minor concern to the manufacturer if they are provided for in the price of the goods. In general, it may be said that the specifications are not over exacting, considering the object to be attained. It is to be observed that the importance of the air brake hose problem has led the Association of Railway Master Car Builders to study the subject, with the result that the association has issued a standard specification recommended as general practice. This specification will doubtless come into extended use through the operation of the Master Car Builders' rules regulating the interchange of car repairs. They are thus of special interest and are therefore given in full so far as they relate to the subject of air brake hose.

MASTER CAR BUILDERS' SPECIFICATIONS.

IN 1901 the following specifications and tests for air brake hose were adopted as "recommended practice":

1. All air brake hose must be soft and pliable and not less than 3 ply nor more than 4 ply. These must be made of rubber and cotton fabric, each the best of its kind made for the purpose; no rubber substitute or short fiber cotton to be used.

2. Tube must be hand made, composed of three calenders of $\frac{1}{32}$ inch rubber. It must be free from holes and imperfections in general, and must be so firmly united to the cotton fabric that it cannot be separated without breaking or splitting in two. The tube must be a high quality of rubber and must be of such composition as to successfully meet the requirements of the stretching test given below; the tube to be not less than $\frac{3}{32}$ inch thick at any point.

3. The canvas or woven fabric used as wrapping for the hose to be made of long fiber cotton loosely woven, and to weigh not less than 22 ounces per yard, and to be from 38 inches to 40 inches wide. The wrapping must be frictioned on both sides, and must have in addition a distinct coating or layer of gum between each ply of wrapping. The canvas wrapping to be applied on the bias.

4. The cover must be of the same quality of gum as the tube and must not be less than $\frac{1}{16}$ to $\frac{1}{8}$ inch.

5. Air brake hose to be furnished in 22 inch lengths. Variations exceeding $\frac{1}{4}$ inch in length will not be permitted. Hose must be capped on ends with not less than $\frac{1}{16}$ inch or more than $\frac{1}{8}$ inch rubber caps. Caps must be vulcanized on, not pasted or cemented.

6. The inside diameter of all 1¼ inch air brake hose must not be less than 1¼ inches or more than $1\frac{5}{16}$ inches, except at the ends, which are to be enlarged $\frac{5}{16}$ of an inch for a distance of 2¾ inches, the change from the smaller to the larger to be made tapering. The outside diameters must be kept within the following dimensions: The main part of hose 1⅞ inches to 2 inches; the enlarged ends $2\frac{1}{16}$ inches to $2\frac{5}{16}$ inches. The hose must be finished smooth and regular in size throughout, as stated above.

7. Each standard length of hose must be branded with the name of manufacturer, year and month when made, serial number, the initials of the railway company, also have a table of raised letters at least $\frac{5}{16}$ inch high to show date of application and removal, thus:

D. L. & W. R. R. Co. 1¼									
01 – 01	01	A	1	2	3	4	5	6	Serial No.
	02		7	8	9	10	11	12	
	03								
3 – 04	04	R	1	2	3	4	5	6	
	05		7	8	9	10	11	12	
Name of Manufacturer									

Each lot of 200 or less hose must bear the manufacturer's serial number commencing at 1 on the first of the year and continuing consecutively till the end of the year. For each lot of 200 or less one extra hose must be furnished free of cost for test. All markings to be full and distinct and made on a thin layer of white or red rubber, vulcanized, and so applied to be removed by cutting with a knife or sharp instrument.

8. Test hose to be subjected to the following tests:

Bursting Test.—Test hose must stand for 10 minutes a pressure of 500 pounds before bursting. Each hose must stand a shop test of 200 pounds.

Friction Test.—A section 1 inch long will be taken from any part of the hose and the friction determined by the force and time required to unwind the hose, the force to be applied at right angles to the line of separation with a weight of 25 pounds suspended from the separated end, the separation must be uniform and regular and when unwinding the average speed must not exceed 6 inches in 10 minutes.

Stretching Test.—A one inch section of the rubber tube or inner lining at the lapped or thickest part. Marks 2 inches apart on the test piece; it will then be stretched till the marks are 10 inches apart and released immediately. The piece will then be remarked as at first and stretched 10 inches or 400 per cent. and will remain stretched 10 minutes. It will then be released and the distance measured between the marks 10 minutes after the release. In no case must test piece show defective rubber or show a permanent set of more than ¼ of an inch between the 2 inch marks. Small strips taken from the cover or friction will be subjected to the same test.

9. If the test hose fails to meet the required tests the lot from which it is taken may be rejected without further examination. If the test hose is satisfactory the entire lot will be examined and those complying with the requirements herein set forth will be accepted. All rejected hose will be returned to manufacturers, they paying freight charges both ways.

RAILWAY COMPANY TESTS.

THE majority of roads purchasing air brake hose on specifications require the tests cited in these M. C. B. specifications. There is also a strong tendency to favor enlargement of the ends of hose. This form adapts it with far less strain to the taper of the nipple and shank of the coupling, and consequently lessens the liability of injury to the tube and overstraining the fabric.

Two roads—the Pennsylvania and the Chicago, Milwaukee and St. Paul—limit the expansion of diameter to $\frac{1}{16}$ inch with 100 pounds pressure. The latter road also prescribes a flexibility test. A similar test is also required by the Chicago meat packing concern of Swift & Co., who are large users of rubber hose on refrigerator cars.

The directions for executing all of these tests are found in the specifications issued by the purchasing or testing department of the various railroads. A description of some of the apparatus employed may be worth while.

EXPANSION AND BURSTING TEST.—In the testing room of the Pennsylvania railroad at Altoona, Pennsylvania, is an arrangement of piping for the attachment of several sections of hose under test at the same time. The samples are attached vertically to the pressure pipe and enclosed in a sheet metal box to confine the water in case of a burst during the test. The outside diameters are calipered at the middle of the section to determine the expansion under 100 pounds.

FRICTION TEST.—There are various devices for holding the sample although the test is essentially the same. At the Long Island Railroad laboratory, at Long Island City, New York, the sample is suspended by attaching the free end to the arm of a ring-stand by a small screw clamp. The mandrel in the hose section is of wood, made tight fitting and provided with a small iron axis on which the test weight is hooked. [See Figure 1.] At the Baltimore and Ohio Railroad laboratory

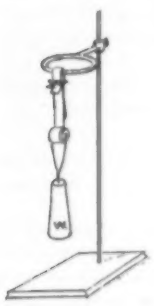


FIG. 1.

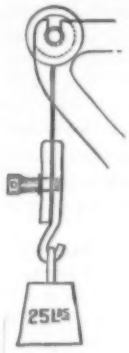


FIG. 2.

FIG. 3.

the sample section is placed on an iron mandrel 6 or 8 inches long, supported in a pair of iron wall brackets and the test weight hooked to the free end of the sample. [See Figure 2.] The arrangment at the Pennsylvania Railroad test room consists of a bar several feet long provided with a series of ten stout hooks from which as many samples may be suspended and tested. The ring for this purpose is attached to the iron mandrel holding the test section, while to the free end is clamped a small hand vise, into the lower end of which the weight is hooked. [See Figure 3.]

STRETCHING TEST.—This test is credited to Mr. H. B. Hodges, purchasing agent of the Long Island railroad, who first suggested it as a means for determining the quality of the rubber and its degree of vulcanization, as shown by the strength and permanent set after test. The arrangement employed by the Pennsylvania railroad for holding the rubber strips under tension consists of a box-like contrivance of wood. This is made to hold one sample at a time, but it is proposed to modify it so as to stretch the samples in a removable frame which can then be set aside for ten minutes while other samples are being put under tension. [See Figure 4.] At the Baltimore and Ohio Railroad testing department, the rubber strip is attached at each end to a stout cord, one of these cords is then attached to a screw eye in a table top while the other is connected to the hook of a spring balance by which the amount of the pull can be ascertained.

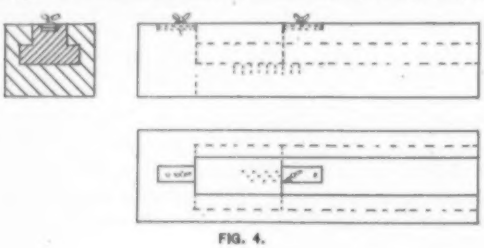


FIG. 4.

VIBRATION TEST.—The air brake hose specification of the Chicago, Milwaukee and St. Paul Railway Co. provides:

One piece to be mounted on standard nipples, with ends rounded to prevent undue cutting of the tube, will be placed on vibrating machine. With a uniform air pressure of 60 pounds per square inch, the hose must not fail in less than 75 hours. The test on the vibrating machine is made as follows: One end of hose is held fast, the other end passing through a distance, vertically, of 14 inches, at the rate of 92 strokes per minute. A uniform air pressure of 60 pounds per square inch is maintained on the hose during test. [See Figure 5.]

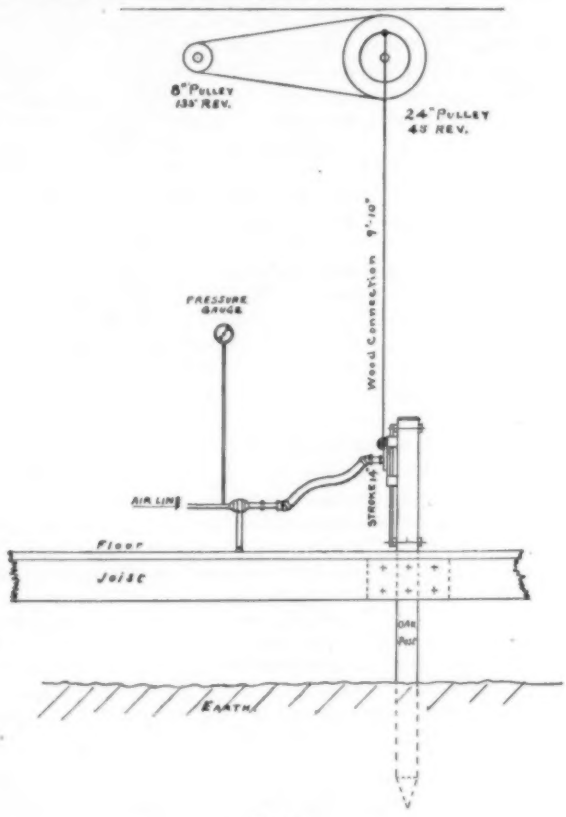


FIG. 5.

The vibrating test required on air brake hose by Swift & Co., of Chicago, is performed on a machine holding the hose (four at a time) vertically and with the lower end fixed working the upper end forward and back, at the rate of 70 strokes per minute.

The practical value of these vibrating tests is open to serious question. The conditions under which they are made are very unlike those of actual service, and the results are so extremely

erratic, even on hose of high quality friction, that it is safe to say that the test is regarded with less favor than any other. So far as known it is employed only by the Chicago, Milwaukee and St. Paul railway and Swift & Co. A far more reasonable flexibility or anti-kinking test is that requiring the 22 inch piece of 1¼ inch four-ply hose to admit of being doubled back upon itself till the ends are 16 inches apart, center to center, without kinking at the bend. Also the deflection test by measuring the deflection when a piece of hose firmly clamped is supporting 10 pounds, 10 inches from point of support.

Among the notable specification requirements on air hose should be mentioned those of the New York Central and Hudson River Railroad Co. which call for composite tube and cover—*i. e.*, the tube is to be "formed with a complete inner tube of $\frac{1}{16}$ inch rubber, wrapped with a single wrapping of loosely woven 12 ounce cotton canvas, the whole being covered with an outer tube of $\frac{1}{32}$ inch thick rubber. - - - - - Cover must be made in composite form, in the same manner as provided for with the tube." Rubber $\frac{1}{32}$ inch is called for either side of the 12 ounce duck used in the cover. There is doubtless some advantage against wear and weathering in the composite structure of the cover, but hardly enough to compensate for the extra cost in making such a hose.

In the specifications issued by the Baltimore and Ohio Railroad Co. is an interesting attempt to express quantitatively the values of friction, tube and cover. It is done by a calculated summary figured from the data derived by the tests. As determined by this summary the "comparative figure," as it is termed, must be at least 400. The calculation is made as shown in the following example which is quoted from the specifications and illustrates an air brake hose that passes the specified requirements with 23.8 points to spare:

Friction.	*Example.*
In minutes up to 15 mins. ×10	14 mins. ×10= 140.0
Tube.	
35 minus 1st permanent set	35—12%= 23.0
15 minus 2d permanent set ×10	15—4%×10= 110.0
Strength at beginning of 10 mins. ÷100	200÷100= 2.0
Ultimate elongation ÷100	450%÷100= 4.5
Ultimate strength ÷200	650÷200= 3.2
Cover.	
35 minus 1st permanent set	35—11%= 24 0
15 minus 2d permanent set ×5	15—3%×5= 60.0
Strength at beginning of 10 mins. ÷100	300÷100= 3.0
Ultimate elongation ÷100	500÷100= 5.0
Ultimate strength ÷200	625÷200= 3.1
50 minus % drop in strength of cover (during 10 mins. under 450% stretch.)	50—4%= 46.0
	423.8

The entire calculation is purely empirical and the factors are arbitrarily selected and applied with the evident intention of emphasizing certain of the tests known to give high results in proportion to the quality of the rubber stock employed in making the hose. The principal points thus markedly influencing the final "comparative figure" are the friction, the permanent set of tube and cover, and the percentage of drop or reduction in strength of cover when under strain for ten minutes.

It is stated that, as a result of these specifications, the life of air brake hose on the Baltimore and Ohio has increased from about 12 months for regular brands to about 24 months for specification goods. If this be so, there would seem to be no pecuniary advantage in paying high prices for specification goods over medium priced regular brands with 24 months guarantee.

[CONCLUDING PAPER NEXT MONTH.]

AN OLD SCHEME UNDER A NEW NAME.

THERE has been widely distributed of late a printed sheet with the heading *Financial Topics*—Vol. I, No. 1; December, 1903. It purports to be issued from—

Room 717, Exchange Court Building, New York.

The contents of the paper are devoted mainly to advertising the "International Rubber and Trading Co.", the address of which is stated to be—

No. 52 Broadway, New York.

Now it happens that these two addresses lead to one and the same building. The latter address leads to the rooms occupied by the late "Pará Rubber Plantation Co." The first leads to a room on a lower floor, occupied by Mr. Jack Merrill, whose versatility in advertising the shares of this company has been mentioned hitherto in THE INDIA RUBBER WORLD. Which would suggest that a certain investment scheme, no better than it ought to be, is being conducted under a new name.

There is also being distributed a pamphlet prospectus, bearing on the cover the name "International Rubber and Trading Co.", but filled inside with reading matter very similar to the prospectuses of the old Pará Rubber Plantation Co. There is a familiar picture—a view of the rubber warehouse of Messrs. Witt & Co., at Manáos, but used in this instance as if to illustrate "Packing Rubber for Shipment" on the Casiquiare property. The picture was derived from THE INDIA RUBBER WORLD, by the way, and is used without respect for our copyright.

There is not space here for a lengthy review of this prospectus. But it is strongly advised that, before investing in the company's shares, any one interested should investigate the truth of the assertion (on page 13):

That there exist the best possible facilities for transportation. The Amazon river is navigable for ocean steamers to Manáos, just above the junction of the rio Negro and Amazon rivers. From Manáos, the rio Negro is navigable to a point of conjunction with the Casiquiare river. The latter joins the rio Negro river with the Orinoco river which, with a Decoville railway at the Delta, is navigable to the Carribean sea. The Casiquiare river is navigable at all seasons of the year, and no difficulty whatever is to be encountered in bringing out the product of the region contiguous to it.

The "Decoville railway" should prove especially interesting.

We are in possession of a letter dated December 3, 1903, and signed by M. Doud as secretary of the International Rubber and Trading Co., stating:

The Company has contracted to deliver a large quantity of rubber in the next ninety days, and will have no difficulty in marketing all that it can produce, at a large margin of profit.

According to this, the trade should be prepared, about March 2, to see so much rubber thrown upon the market as to depress prices below all records. Anything like stability in crude rubber prices is maintained nowadays only by the free exchange of information regarding stocks. But a $10,000,000 trading company that holds up its sleeve—or up the Casiquiare river—an indefinite large supply of rubber, about which it refuses any information, could play havoc with the market any day. It will be time to feel concern about this March rubber, however, when it reaches the market.

ASBESTOS IN CANADA.—The following figures, from an official source, indicate the value of the production of Canadian asbestos, in calendar years:

1881.....	$ 35,100	1892.....	$999,878	1901.....	$1,259,759
1886.....	206,251	1896.....	429,856	1902.....	1,191,328

The larger proportion of the asbestos exports are to the United States.

THE INDIA-RUBBER TRADE IN GREAT BRITAIN.

By Our Regular Correspondent.

I CANNOT say that my eye noticed anything particularly novel at the Stanley and National cycle shows, held as usual in London at the end of November. That is, with regard to the applications of rubber. Old friends were there in abundance, with one or two conspicuous absentees, and the rubber trade was rather more strongly represented than in some recent years. At the National show at the Crystal Palace, The North British Rubber Co. were to the fore with the Bartlett-Clincher tire. At the large exhibit of the Dunlop Pneumatic Tyre Co. was shown the new non slipping cover which consists of longitudinal ridges reinforced by transverse projections which prevent the ridges splaying apart and quickly wearing off. These transverse projections form the words "Dunlop Tyre," and thus serve the double purpose of utility and at the same time of affording a means of identification. Motor garments formed a prominent feature of the Dunlop exhibit. The Scottish Tyre, Limited, of Glasgow, showed their "Scottish de Luxe," "Scottish Victor" and "Edinburg" beaded edge tires. The alliterative motto used by this company, viz.: "Pure Pará prevents puncture," may possibly be challenged as to its accuracy; it certainly would not be fair to take it as true in all respects, because it would imply that in cases where puncture has occurred rubber other than Pará must have been used. To judge by the references to the use of "Pará rubber only" which occur consistently in all tire makers pamphlets it may be taken that the existence of inferior brands is practically unknown, though of course the statements that "our tires" are made of fine Pará throughout may be read as a warning that this is not the case with competitors' makes. Other firms exhibiting at the Crystal Palace were the Martin Tyre Co., and the Dawson tire, shown by the inventor, Mrs. Dawson, of Southport, Lancashire. This consists of a woven cord band prepared with solution to fill up all the crevices and having a rubber strip placed on the band. The Williams Patent Tyre Co. are concerned with the exploitation of Williams's patent adjustable band and fastenings by the use of which it is claimed that immunity from side slip is secured.

THE CYCLE SHOWS.

Turning now to the Stanley show, at the Agricultural Hall, it may be mentioned that the following well known rubber manufacturers had their goods on show: David Moseley & Sons, North British Co., Dunlop company, Avon Rubber Co., Midland Rubber Co., Reddaway & Co., W. & A. Bates & Co., Capon, Heaton & Co. and the Continental Rubber Co. As far as I could see there was no particular novelty shown by any of the above, improvements and developments being the order of the day. Messrs. Moseley had a special exhibit in the gallery for the Black Tyre Co. of Glasgow. The Lovelace patent anti-slipping tread was shown by the Avon Rubber Co., the sole manufacturers. The Clifton Rubber Co. announce that the various legal suits which have hindered their progress in the past have all been satisfactorily settled and that users of their "Wapshare" and "Clifton" tires need have no fear of any question of infringement being raised. This company, is located at Lower Priory, Birmingham. Clipper and Palmer tires formed a bold show, these firms catering specially for the motor cyclist. As is well known the Clipper-Continental tyres are made at the Continental company's works at Hanover. In connection with their motor tires this company emphases the necessity of fitting a car with tires of the requisite strength for the weight they have to support. The pamphlet issued by the Continental Co. and entitled: "Clipper-Continental Tyres—How to Treat and Repair Them," is replete with useful information and should prove highly popular. The Le Pâris racing tyres can claim 90 per cent. of the classic road races of the past season and the company is naturally somewhat jubilant over the fact. The Le Cuirasse non slipping band is supplied in red or black rubber and is stated to be unpuncturable and everlasting, though if it is made of rubber the latter statement seems a somewhat bold one. This company has its location at 20, Kirby street, Hatton garden, London, E. C. Beyond the Continental, the only other foreign firm that caught my eye was the Fulda Rubber Works Co., Ltd., which together with the Aschaffenburg Celluloid Co. was represented at the exhibit of the Norton Folgate Rubber Solution Co. One of the boldest claims made at the show emanated from Stand 287, where the Azulay patent horse hair tire was exhibited. It is stated that it is the nearest approach to a non puncturable tire ever offered to the public, and that it will revolutionize the cycle trade. Though I have no reason whatever to be sceptical on the matter, I shall look with interest for reports from riders. The tires are to be obtained from Mr. Leon Azulay, Southwick, Sussex.

THE business in rubber heel pads has rapidly advanced to one of importance, among others who are turning out large quantities being the Liverpool Rubber Co. and the Hyde Rubber Co. A recent estimate puts the number sold at 30,000 a week, which is probably not far from the mark, seeing how popular they have become with all classes. Various reasons have been adduced for this popularity, but those who have given publicity to their views seem to have overlooked the question of ultimate economy to the wearer. So many people rapidly wear down the heels of their boots that they find the shilling or so expenditure on a rubber pad to save them considerably more than this sum in cobbler's bills. It is claimed for the rubber aluminium pads sold at 138, High Holborn, London, that by this make the tendency to slip on greasy pavements is overcome, though I am not aware of any statistics showing the defects of the plain rubber pad in this direction. The O'Sullivan silent tread heels are being sold by The B. F. Goodrich Co. at 7, Snow Hill, London, E. C. A point which is not without some importance is the capability of the retail bootmaker or working cobbler to put the rubber heels on properly. Naturally, any one may say the majority of these men know little or nothing about rubber and the various ways of attaching it to leather, and many complaints which have arisen are attributable to ignorance in this direction rather than to any defect in the rubber itself.

RUBBER HEEL PADS.

IN the course of a recent conversation with Mr. W. F. Reid, the inventor of Velvril, I was informed that this product is making steady progress in public estimation, though I gathered that the makers have largely modified their claims as to Velvril being a substitute for India-rubber. It is in the direction of a cheap substitute for leather that it is being used, in decorative work generally. There is also a demand for it in the upholstering of motor cars. That there is a growing market for material of this sort is evidenced by the progress being made by the Pluviusin Co., of Monton, near Manchester, and by the success of the Pegamoid company. This concern is by no means dead as is supposed by

ARTIFICIAL LEATHER.

many to be the case since the upsetting of the patent by Mr. Justice Joyce. On the contrary, it has taken a new lease of life in its works near London, though a modification is perceptible in the extravagant claims made for the product in the days of its first announcement to the world. The recently issued report of New Pegamoid states that in spite of the cessation of the large government orders due to the South African war steady progress is being made, a dividend of 8 per cent. being available for distribution.

A QUESTION OF POLICY.

SOME rubber manufacturers, more especially those whose business is practically confined to one class of goods, have been anxiously debating within themselves as to whether the expenses incurred in the employment of a regular traveler are really justified, or whether just as satisfactory results could not be obtained by means of postal communication alone. Of course it would be difficult to speak generally on the matter; it is one for each to decide for himself with the facts and figures at his disposal. As a manufacturer there is much uncertainty about the progress of a traveler; on one journey he may get satisfactory interviews with customers and justify his appointment. Next time he may find that he has been preceded by a rival and that there are no orders to give away, or the buyer is engaged and cannot see him that day. Next time, perhaps, he is more fortunate. Thus the cycle goes on, the result being that at the end of the year the traveler has made his expenses. These expenses of course have to come out of the price charged for the goods, and it has occurred to some that this extra cost might be taken off the goods if they were offered by the post. The buyer would at once see the advantage in price and this might do more in persuading him to give his orders than would the persuasive eulogies of the traveler offering the same goods at a higher price. As I have said, it is a matter for each to decide for himself, but it seems of sufficient interest to make a reference to it.

SOUTH AFRICA.

THE Board of Trade Report on South African trade contains one or two remarks of interest to our industry. Rubber goods are mostly obtained from England, but there is a tendency, especially among American mining engineers, to give preference to the manufacturer of the States for mechanical goods. American goods are said to owe their superiority to attention to small details and the British manufacturer is exhorted to act on similar lines if he would stem the threatened loss of his prestige. With regard to the requirements of the mining engineer, I referred in a recent issue to the fact of the rubber belts for Frue vanners being mainly supplied from America and I suggested that British manufacturers might look into this matter. Events, however, move rapidly in mining and I hope I shall not be accused of any underhand motive if I say that the Frue vanner with its rubber belt bids fair to be more and more displaced by the Wilfley concentrator. In this machine the buddling surface consists of linoleum, this material having been selected as the best after a long series of experiments, in which wood, rubber, marble, slate, and numerous metals were tried. I am not here advertising the merits of any particular form of concentrating table, but it seems important to say that recent events go to show that the amount of rubber used in mining machinery may decrease rather than increase.

DUNLOP LITIGATION.

IT would seem that the prominent position of the Dunlop company as litigants in the courts is to be sustained right up to the lapsing of the patents, a date which is now rapidly approaching. The recent action against Messrs. Moseley failed because the judge held that the manufacture and sale of outer covers alone was not an infringement. In another case versus the North British Rubber Co. the Dunlop company were not more fortunate. This somewhat complicated action had to do with the arrangement come to between the North British Co. and Michelin of Clermont-Ferrand for the latter to manufacture the clincher motor tire for sale by the former in England. The arrangement certainly caused some little surprise when it was announced about a year ago, because it seemed to amount to a confession by the North British that their own manufacture was not up to the mark. In connection with some remarks on the Dunlop patents a London financial paper says: "We are not sure it will not be a good thing for the company to be relieved of the necessity for constant litigation which the protection of its patents has involved and in future have to rely entirely on excellence of manufacture and superiority of workmanship." Apart from litigation troubles it is satisfactory to see from the recent balance sheet how the earnings and prospects of the company have increased.

OUR EDITOR.

I HAD the pleasure in November of meeting Mr. Pearson in London, and I take the present opportunity of conveying to those British manufacturers whom Mr. Pearson had no time to call upon, his regret that the time at his disposal in England was too short to enable him to renew old friendships or to add to the list of subscribers with whom he has personal acquaintance. I am sure that those members of the trade who have experienced our editor's hospitality and attention when in the States will regret that his brief stay in England allowed only of a stoppage in Liverpool and London, and the more prolonged visit to our shores which he proposes to make at no distant date will doubtless be anticipated with pleasure. Mr. Pearson is at present in Ceylon and proposes to return to the States via Japan on the completion of his tour.

DEMAND FOR AUTOMOBILE TIRES.

UNDER the new law in New York state licensing automobiles and requiring each to be tagged with a number, about 8800 machines have been registered, of which number it is estimated that one half are owned in New York city. There is no city office, by the way, for the registry of automobiles. To take this state alone, an idea of the great expenditure for automobile tires may be gained. The report of the 500 mile reliability contest, between New York and Boston, in October, 1902, indicated $35 each as the average retail price of the tires on the automobiles entered. An official of the Automobile Club of America, under whose auspices the contest was made, estimates that the average pleasure car now in use in the United States requires six tires per year. Applying this estimate, and the above price of tires, to the number of automobiles registered in New York state, a yearly expenditure of $1,848,000 for tires would be required. But the above list includes many heavy commercial vehicles, requiring heavier and more expensive tires than were entered in the New York-Boston contest, so that the expense for tires is probably nearer $2,000,000.——On March 23, 1903, an automobile licensing act went into effect in New Jersey, and on December 15 it was reported that 4287 machines had been licensed in that state. In Connecticut, 1343 automobiles have been registered, and in Massachusetts 3714, of which 500 are motor cycles. It is understood, of course, that some of these figures are duplicates, the same vehicle being registered in two states. A recent statement was to the effect that 1700 automobiles were owned in the city of Chicago. There certainly must be as many more automobiles in the remaining forty states.

OFFICIAL STATISTICS OF INDIA-RUBBER AND GUTTA-PERCHA.

For the United States Fiscal Year Ended June 30, 1903.

INDIA-RUBBER.

I.—Imports of Crude India-Rubber, by Countries.

FROM—	Pounds.	Value.
Europe:		
Belgium	5,328,674	$3,337,766
France	379,635	239,064
Germany	2,316,814	1,445,698
Netherlands	260,865	162,383
Portugal	2,009,455	1,053,900
United Kingdom	9,714,597	5,616,827
Total	20,710,040	$11,856,638
North America:		
British North America	11,421	$ 5,464
Central America	1,063,351	542,984
Mexico	251,776	97,512
Other North America	15,609	6,247
Total	1,342,157	$652,237
South America:		
Brazil	31,119,486	$17,218,519
Colombia	455,969	176,568
Ecuador	681,136	296,031
Peru	210,899	105,622
Other South America	15,828	7,437
Total	32,483,318	$17,804,077
Asia and Oceanica:		
East Indies—British	454,594	$124,575
All other	462	183
Total	455,056	$124,758
GRAND TOTAL	55,010,571	$30,436,710
Total, 1901-02	50,413,481	24,809,230
Total, 1900-01	55,275,529	28,455,383
Total, 1899-00	49,377,138	31,376,867
Total, 1898-99	51,063,066	31,707,620
Total, 1897-98	46,055,497	25,386,010
Total, 1896-97	35,574,449	17,457,976
Total, 1895-96	36,774,480	16,603,020
Total, 1894-95	39,741,697	18,358,121
Total, 1893-94	33,757,783	15,077,933
Total, 1892-93	41,547,680	17,809,259
Total, 1891-92	39,976,266	19,718,216

II.—Imports of Crude India-Rubber, by Customs Districts.

AT—	Pounds.	Value.
Boston	1,674,196	$ 853,325
New York	52,770,004	29,284,547
Philadelphia	510	128
New Orleans	433,088	255,466
San Francisco	61,782	20,743
Other ports	70,991	22,501
Total	55,010,571	$30,436,710

III.—Imports of Manufactures of India-Rubber, by Countries.

[+ Indicates increase; — indicates decrease.]

FROM—	Value.
Austria-Hungary	$ 6,695+
Belgium	55,532+
France	129,634+
Germany	308,551+
Italy	534+
Netherlands	1,236—
Russia	28,261+
United Kingdom	182,768+
Other Europe	36—
British North America	2,132+
Other countries	475+
Total, 1902-03	$665,972+
Total, 1901-02	449,766
Total, 1900-01	478,663
Total, 1899-00	564,083
Total, 1898-99	379,309
Total, 1897-98	309,247
Total, 1896-97	297,943
Total, 1895-96	294,228
Total, 1894-95	315,902
Total, 1893-94	309,308
Total, 1892-93	338,435

IV.—Imports of Manufactures of India-Rubber, by Customs Districts.

AT—	Value.
Boston and Charlestown	$ 78,652
New York	517,774
Philadelphia	11,036
Other Atlantic ports	15,606
New Orleans	1,824
Other Gulf ports	508
San Francisco	10,839
Other Pacific ports	1,204
Northern and lake ports	25,793
All other ports	2,736
Total	$665,972

V.—Exports of Manufactures of India-Rubber (and Gutta-Percha), by Customs Districts.

FROM—	Belting, Packing, and Hose.	Boots and Shoes.	Other Rubber Goods.
Baltimore	$ 1,368	$ 2,074	$ 1,089
Boston and Charlestn	16,888	538,254	324,358
New York	489,164	413,826	1,269,313
Philadelphia	2,705	807	103
All other Atlantic	4,422	1,419	760
Arizona	13,908	1,018	12,780
Corpus Christi			30,007
Paso del Norte	23,537		57,723
Saluria	29,594	4	14,088
Alaska	18,453	19,472	7,137
Puget Sound	18,855	17,300	14,921
San Diego	789	304	228
San Francisco	123,781	44,339	110,458
Buffalo Creek			80,065
Champlain	1,879		90,210
Detroit	19,056	74	33,393
Memphremagog, Vt.	13,894	2,028	13,700
Niagara			127,894
Vermont, Vt.	25,983	10,090	68,488
Other N. border, etc., ports	19,443	5,191	42,644
Total	$819,995	$1,056,491	$2,299,875

GUTTA-PERCHA.

I.—Imports of Crude Gutta-Percha, by Countries.

FROM—	Pounds.	Value.
France	3,322	$ 3,387
Germany	161,910	87,204
Netherlands	380	625
United Kingdom	115,180	90,804
Central America	478	273
Other North America	1,472	530
East Indies—British	25,274	35,408
Other lands	1,309	1,112
Total, 1902-03	316,290	$222,400
Total, 1901-02	525,767	252,329
Total, 1900-01	280,560	130,957
Total, 1899-00	427,678	178,616
Total, 1898-99	518,939	167,577
Total, 1897-98	636,477	159,381
GUTTA-JULETONG (PONTIANAK).		
United Kingdom	53,909	$ 2,897
East Indies—British	13,930,908	342,534
Total, 1902-03	13,984,817	$345,431
Total, 1901-02	16,850,821	501,418
Total, 1900-01	9,371,087	248,838

NOTE.—About 84 per cent. in volume and 95 per cent. in value of the Gutta-percha imported arrived at New York, and the remainder principally at Boston. Of the Pontianak, 13,895,554 pounds arrived at New York and 89,273 pounds at San Francisco.

Imports of Crude Gutta-percha for earlier years are not given, for the reason that the customs returns then included under this head Balata, Pontianak, etc.

GUTTA-PERCHA.

II.—Imports of Manufactures of Gutta-Percha, by Countries.

FROM—	Value.
Belgium	$ 10,176
Denmark	23
France	6,604
Germany	83,286
Sweden, Norway	287
United Kingdom	124,813
Other countries	9
Total, 1902-03	$225,198
Total, 1901-02	127,780
Total, 1900-01	163,337
Total, 1899-00	284,332
Total, 1898-99	115,582
Total, 1897-98	156,997
Total, 1896-97	97,194

NOTE.—Of the above imports, $13,764 worth was entered at Pacific ports.

RUBBER SCRAP.

Quantity and Value of Imports, by Countries.

FROM—	Pounds.	Value.
Belgium	338,912	$ 20,364
France	531,632	38,223
Germany	8,290,940	517,483
Netherlands	1,860	283
Russia—Baltic	7,219,680	438,842
—Black Sea	3,235,217	181,484
Sweden, Norway	585,022	38,917
Turkey in Europe	316,606	19,331
United Kingdom	1,851,168	123,109
British North America	2,216,891	137,183
Central America	165	27
Mexico	16,414	479
Other North America	55,507	3,412
Total, 1902-03	24,659,794	$1,516,137
Total, 1901-02	22,894,900	$1,437,960
Total, 1900-01	15,235,236	988,316
Total, 1899-00	19,093,547	1,249,231
Total, 1898-99	10,513,604	462,014

NOTE.—For information regarding imports under this heading, readers are referred to the article on "The World's Trade in Waste Rubber," in THE INDIA RUBBER WORLD, March 1, 1903 (page 196), giving details back to 1893, together with an analysis of the real sources of the material imported.

RECLAIMED RUBBER.

Exports of Reclaimed Rubber, by Countries, for Four Years.

TO—	Value, 1899-00.	Value, 1900-01.	Value, 1901-02.	Value, 1902-03.
Austria-Hungary	$8,496	$	$ 80	$ 481
Belgium	1,207	703	1,250	1,084
France	2,276	13,220	38,310	13,932
Germany	56,263	48,419	20,191	19,425
Italy	16,119	17,604	12,291	11,284
Netherlands	2,923	2,734	6,550	9,049
Denmark			2,809	
Russia	2,033	575		418
Spain			5,552	1,774
Sweden-Norway	6,149	10,103	18,318	215,904
Great Britain	125,902	293,409	220,844	129,216
Canada	259,416	200,422	143,276	1,368
Mexico	9,226	1,072	42	
Japan	2,214	2,830	175	85
Australia				566
Other lands	60	442	40	
Total	$492,284	$642,093	$569,698	$404,586

[Exports, 1896-97, $119,440; 1897-98, $257,629; 1898-99, $376,962.]

EXPORTS OF AMERICAN RUBBER GOODS.

FISCAL YEAR ENDED JUNE 30, 1903.

EXPORTED TO—	Belting, Packing, and Hose.	Boots and Shoes. Pairs.	Boots and Shoes. Value.	Other Goods Value.	Total Value.
EUROPE:					
Austria-Hungary	$ 811	7,766	$ 2,755	$ 6,180	$ 9,746
Azores and Madeira	67	440	786	84	887
Belgium	4,313	67,847	22,828	42,596	69,737
Denmark	2,899	19,316	7,879	6,055	16,833
France	13,168	291,247	108,971	80,083	202,222
Germany	29,900	289,777	106,152	148,170	284,222
Gibraltar	497	....	....	28	525
Italy	1,760	22,036	10,826	59,638	72,224
Netherlands	1,836	25,238	10 273	44.680	56.759
Norway	3,795	6,733	3,347	5,217	12.359
Portugal	75	30	70	2,342	2,487
Roumania	....	105	26	....	26
Russia	5,687	....	....	3,177	8,864
Spain	750	63,154	27 446	5.093	33.289
Sweden	1,747	1,722	754	8,691	11.192
Switzerland	849	13,286	5,183	1,971	8,003
Turkey in Europe	....	57,031	23,672	686	24,358
United Kingdom	86.690	1,025,582	460,954	873,065	1,420,709
Total, Europe	$154,814	1,891,009	$791,872	$1,287,756	$2,234,442
NORTH AMERICA:					
Bermuda	$ 951	170	$ 87	$ 613	$ 1,651
British Honduras	349	312	144	70	563
Nova Scotia, New Bruns.	13.322	16,452	29.139	6,673	40.134
Quebec, Ontario, etc	94 367	47,078	43,137	458,088	595.592
British Columbia	32,245	8,740	17,054	17,042	66,341
Newfoundland, Labrador	4,603	14,705	12,465	1,064	18.132
Costa Rica	3,746	178	60	5,042	8,848
Guatemala	2,695	60	28	595	3,288
Honduras	2,411	....	....	194	2,606
Nicaragua	3.615	12	21	765	4,401
Salvador	1,333	....	....	418	1.751
Mexico	146 035	3,176	2,609	160,328	308 969
Miquelon, Langley, etc	207	4,648	4,345	20	4,572
West Indies—British	4,396	787	397	6,731	11.524
Cuba	32,797	2,351	2,210	73,786	108,793
Danish	465	....	....	201	666
Dutch	125	36	15	468	605
French	60	....	....	110	170
Haiti	614	60	65	399	1,068
Santo Domingo	2,472	1,246	493	751	3,716
Total, North America	$346,778	100,011	$103,259	$733,352	$1,183,389
SOUTH AMERICA:					
Argentina	$13,985	388	$ 186	$ 8,007	$ 22,178
Brazil	1,747	3,535	1,882	18,428	22.057
Chile	7,467	187	350	5,693	13.510
Colombia	6,679	3,831	1,370	3,421	11,470
Ecuador	12,599	222	100	1,951	14.650
Guianas—British	412	1,283	540	620	1,572
Dutch	600	....	....	537	1,137
French	....	2	3	....	3
Peru	3,655	180	180	7,104	10,939
Uruguay	28	72	35	1,119	1,182
Venezuela	1.631	404	130	3,715	5.476
Total, South America	$ 48,303	10,104	$ 4,776	$ 50 595	$104,174
ASIA:					
Chinese Empire	$ 5.729	3,628	$ 1,658	$ 7,186	$ 14.573
China—Russian	....	....	....	245	245
East Indies—British	2.094	1,594	1,127	8,428	11.649
Dutch	79	....	....	476	555
Hong Kong	1.947	91,942	29,126	10,319	41,392
Japan	42,922	46,629	28,558	87,620	159.100
Korea	1,839	....	....	405	2,244
Russia, Asiatic	....	....	....	135	135
Turkey in Asia	230	8,400	3,657	99	3.986
Total, Asia	$ 54,840	152,193	$ 64,126	$114,913	$233,879
OCEANICA:					
British Australasia	$ 98,463	134,576	$ 77,778	$ 57,196	$233,436
British Oceanica	10	....	....	8	18
French Oceanica	2.376	233	152	857	3,385
German Oceanica	....	....	....	253	253
Philippine Islands	20.692	2,275	2,396	35,773	58,861
Total, Oceanica	$121,541	137,078	$ 80,326	$94,086	$295,953
AFRICA:					
British Africa—West	$ 306	136	$ 140	$ 33	$ 479
South	82,402	16,723	11,682	15,855	109,939
Canary Islands	....	....	....	36	36
Liberia	....	1	3	3	6
Portuguese Africa	751	....	....	345	1,096
Turkey in Africa—Egypt	....	2	6	....	6
All other Africa	9,750	144	391	2,901	12,952
Total, Africa	$ 93,209	17,006	$ 12,132	$ 19,173	$124,514
GRAND TOTAL 1903.	$819,985	2,207,401	$1,056,491	$2,299,875	$4,176,351
Grand Total, 1902	634.14	2,594,708	1,046.315	1,781,941	3,462,402
Grand Total, 1901	868.726	1,459,100	724.015	1,727,527	3,017,268
Grand Total, 1900	541,830	767,104	420,746	1,405,212	2,367,788
Grand Total, 1899	.(a).	486,586	260,886	1,504,499	1,765,385
Grand Total, 1898	.(a).	391,832	224,705	1,499,157	1,723,862
Grand Total, 1897	.(a).	306,026	195,499	1,611,646	1,807,145
Grand Total, 1896	.(a).	350,713	216,657	1,642,499	1 859,156
Grand Total, 1895	.(a).	383 793	225,986	1,279,156	1,505,142
Grand Total, 1894	.(a).	261,657	155,011	1,306,831	1,461,842

a—Included in "Other Goods" before 1899.

LITERATURE OF INDIA-RUBBER.

THE CEYLON HANDBOOK AND DIRECTORY AND COMPENDIUM OF Useful Information for 1903-04, to which is appended a Review of the Planting Enterprise and Agriculture of the Colony. Compiled and Edited by J. Ferguson, Editor of the *Ceylon Observer*, *Tropical Agriculturist*, etc. Colombo: A. M. & J. Ferguson. 1903. [Cloth. 8vo. Pp. IX+1468+LV; folding tables, maps, and advertisement pages. Price, 15 rupees.]

THE important attention which rubber culture has received of late in Ceylon, and the results attained, renders of interest any authentic information regarding planting conditions in that colony. It would hardly be possible for any information to be sought in relation to Ceylon planting which is not contained in this bulky and closely printed, concisely written volume, which forms the twenty-sixth annual issue, under the same management. In effect, it is a directory of every plantation on the island, with details of its management, and a statement of the acreage devoted to each product. There is information also regarding general conditions on the island—government, laws, history, trade, transportation, and industry, as well as planting. There is a summary of progress in rubber planting, and results to date, together with details of every estate on which such planting has been undertaken. Not only is the work so complete, but it bears ample evidence of being trustworthy, and the publishers are to be commended for the enterprise and public spirit which have induced them so long to maintain this publication.

THE London *India Rubber Journal* has issued its fourth "Diary and Year Book," containing pages for memoranda for each business day during 1904, together with a printed section containing much trade and statistical data of use to the rubber branch in Great Britain, conveniently arranged for reference. The yearly editions of this work have shown continuous improvement, and the publishers express their pleasure at the steady growth in the appreciation shown by their patrons.

IN CURRENT PERIODICALS.

NEUE Kautschukbäume aus Neucaledonien [*Alstonia Dürckheimiana*, Schlechter]. By Rudolf Schlechter=*Der Tropenpflanzer*, Berlin. VII-11 (November, 1903). Pp. 526-530.

Le Première Récolte du Caoutchouc sur les *Hevea* de la Plantation Soebang (Pamanoekan et Tjyassemlandeu). By H. C. Dinet [Resume of a paper in *Teysmania*, Batavia, No. 8, 1903.]=*Revue des Cultures Coloniales*, Paris. XIII-137 (November 20, 1903). Pp. 308-310.

Bericht over Para Caoutchouc. [Exhaustive report by R. Dupont, curator of the botanic station in the Seychelles islands, regarding rubber cultural conditions in general, and results of first experiments in that locality, principally with Pará rubber].=*De Indische Mercuur*, Amsterdam. XXVI-47 (November 24, 1903). Pp. 798-799.

L'Expedition de Monsieur E. Ule dans la Région Caoutchoutifère de l'Amazonie. By É. D. W[ildman].=*Revue des Cultures Coloniales*, Paris. XIII—138 (December 5, 1903.) Pp. 336-337.

Le Maniçoba ou *Manihot Glaziovii*. [Instructions for its culture, extraction of the latex, and the preparation of rubber; translated from an official publication by the government of Bahia, Brazil.]=*Revue des Cultures Coloniales*, Paris. XIII—138 (December 5, 1903.) Pp. 343-346.

La Culture du *Castilloa* au Mexique. [Review of "Rubber Planting on the Isthmus of Tehuantepec," by Henry C. Pearson.]=*Journal d'Agriculture Tropicale*. III—29 (November 30, 1903.) Pp. 338-340.

THE rubber man is a recent arrival in town. His stock consists of two bags, one of which is filled with penny toys. Taking a position in front of a school house at the noon hour, he shows his goods to the children and tells them to bring from home anything composed of rubber and receive a toy in exchange. Old rubber shoes, mackintoshes, water bags, all sorts of things made of rubber, are exchanged after lunch, and the man departs with a load of rubber and the satisfaction, no doubt, of having had the best end of a lot of small bargains.—*The Evening Post (New York)*.

RUBBER NOTES FROM EUROPE.

MOTOR TIRES FOR ENGLAND MADE IN FRANCE.

A DECISION has been rendered in the English courts in *re* Dunlop Pneumatic Tyre Co., Limited, *v.* North British Rubber Co., Limited. The former company purchased from the latter, in 1896, for £200,000, the Bartlett patent, under which they had manufactured the "Clincher" tire. At the same time the Dunlop company licensed the North British company to continue the manufacture of the "Clincher" tire, under said patent, on the payment of a royalty of 5 shillings per pair, but stipulating that the North British company should not manufacture any tire which might infringe the Welsh patent, also owned by the Dunlop company. In January, 1903, the North British company entered into an agreement with Michelin et Cie. (Clermont-Ferrand, France), whereby the latter should manufacture such "Clincher" *motor* tires as the North British Rubber Co. might require for their trade in Great Britain. The French company were not to supply such tires to any other firm in Great Britain, and the North British company were not to have such tires made by any other company, though reserving the right to make in their own works not more than 5000 tires per year. The tire so produced was labelled "The Clincher-Michelin Tyre, Bartlett's patent."

The plaintiffs in this case charge the North British Rubber Co. with violation of the terms of their license in subletting the license to Michelin et Cie. The court, however, held that in this transaction Michelin et Cie. were merely agents of the North British Rubber Co., who are, in the eye of the law, the manufacturers of "Clincher-Michelin" tires; there had been no assignment of the license held from the Dunlop company. As to the second point involved—the claim that the tires so made had, by the inclusion of features not in the original "Clincher" tire, infringed the Welsh patent—the court held that further evidence would have to be presented.

A GOOD YEAR FOR THE DUNLOP COMPANY.

THE Dunlop Pneumatic Tyre Co., Limited, have been able to present to their shareholders, for the seventh business year, the most favorable report for some time past. Despite the continued decline in the price of tires, and the liberal writing off of their patent accounts, the company were able during the year to retire debentures amounting to £132,000, to increase the dividend on ordinary shares from 5 to 6 per cent., and carry forward a balance larger than last year's by £57,519 5*s.* 1*d.* The financial statement for the fiscal year ended September 30, 1903, may be thus summarized:

Dr.				
Carried forward, September 30, 1902..	£177,922	0	0	
Profits from trading, 1902-03.....	145,468	9	11	
Income from investments*.....	84,540	19	3	£407,921 9 2
Cr.				
Interest on debentures.....	£ 17,270	0	0	
Preference dividends—10 per cent....	49,749	10	0	
Ordinary dividends—6 per cent.. ..	59,999	11	7	
Written off patents account..... .	45,371	2	6	£172,390 4 1
Carried forward, September 30, 1903.....				£235,541 5 1

[* Including subsidiary companies.]

The directors report: "With regard to the quality of the automobile tires manufactured by the company, a great deal of interested misrepresentation has taken place. The efforts of the directors to safeguard the patent rights of the shareholders conflict with the large importation of automobiles fitted with tires made abroad. Users do not always understand that motor tires made in Germany and France are manufactured according to purely English inventions (the property of your company) but which are not recognized in Germany or France. Such tires, when improperly imported to England, constitute an infringement of your rights, and the efforts made in defense of those rights cause certain prejudice, of which foreign competitors do not hesitate to avail. The extended sale and practical use of Dunlop motor tires are, however, proving the strongest factors in establishing the superiority of tires made at home under the original patents to which they owe their existence."

REPORT OF THE SILVERTOWN COMPANY.

AT the fortieth annual meeting of shareholders of the India-Rubber, Gutta-Percha, and Telegraph Works Co., Limited (London, December 15), the accounts presented showed a net profit for the fiscal year ended September 30 of £54,568 16*s.* 3*d.* [=$265,559.23], against a profit of £57,554 3*s.* 4*d.* and £56,057 1*s.* 5*d.* for the two preceding years, respectively. The general business showed a falling off as compared with last year, due to a general depression in trade, as a result of which competition has been, if anything, keener than usual. The usual dividend of 10 per cent. was paid for the year. The amount carried forward is £66,930 7*s.* 10*d.*, against £62,361 11*s.* 7*d.* carried forward from the preceding year.

PALMER TIRE PROFITS.

THE last yearly report of The Palmer Tyre, Limited—in which company the Silvertown company hold an important interest—showed profits of £7558, as against £6971 for the year ended September 30, 1902. The dividend this year is 10 per cent. The company are quite hopeful with regard to their new motor tire, described elsewhere in this Journal.

GERMANY.

THE Continental Caoutchouc- und Guttapercha- Compagnie (Hannover) have completed a new building, intended principally for the extension of their export facilities, which fills the last remaining space available on their premises on the Vahrenwalderstrasse.

=The Continental company announce that Manfield & Berger have been appointed their representatives at Dresden (at Palmstrasse, 1), to succeed G. & A. Thoenes, their representatives for many years.

=In a circular to the trade Messrs. Thoenes give expression to their regret at terminating the relations with the Continental company, so pleasantly maintained for 25 years, but they have decided upon this step on account of the advancing years of the heads of the firm, and the growth of their own manufacturing business. G. & A. Thoenes became established as manufacturers of packings—rubber, asbestos, and other—at Radebeul-Dresden, in 1878, and on December 5 celebrated the twenty-fifth anniversary of the founding of their business.

=The *Gummi-Zeitung* hears that negotiations for the formation of a combination of elastic webbing factories of Germany and Austria are nearing completion.

THE GERMAN RUBBER INDUSTRY HONORED.

HERR SENATOR CARL MARET, Harburg, director of the Vereinigte Gummiwaren-Fabriken, Harburg-W.en, has been appointed by his Majesty, the Emperor of Germany, an Imperial Prussian Counsellor of Commerce. This distinction honors alike the whole branch of our industry, because Herr Senator Maret is the nestor of the German rubber industry, and presiding officer of the Central Society of German Rubber Goods Factories. Great satisfaction and congratulations pervade the large circle in which Herr Counsellor of Commerce Maret is held in the highest esteem on the news of this conferred distinction.—*Gummi-Zeitung.*

RECENT RUBBER PATENTS.

THE UNITED STATES PATENT RECORD.

ISSUED NOVEMBER 3, 1903.

NO. 742,831. Pneumatic tire [having a deflated emergency tire between the rim and the ordinary tire and connected with the valve stem]. J. R. Brunt and R. C. Pitt, Christchurch, New Zealand.

742,855. Hose support [a rod connected with a gas jet, to prevent tubing from resting on the glass globe]. J. C. Garrett, San Francisco.

742,880. Pneumatic device for cleaning carpets, floors, or the like. A. Lotz, assignor to Sanitary Compressed Air and Suction Dust Removing Co., both of San Francisco.

743,018. Inhaler [for the administration of remedies]. J. N. McKim, Montreal, Canada.

743,043. Vehicle tire [comprising an elastic outer casing, and a wooden core formed in two members with trusses between]. G. W. Southwick, Franklin, Massachusetts.

743,105. Golf ball. J. H. Roger, Glasgow, Scotland.

743,174. Waterproof garment. James Kipp (manager Goodyear Rubber Co.), New York city.

743,292. Anesthetic apparatus [for administrating anesthetics; comprising a face piece, a rubber bag for regulating the air supply, and other features]. V. Knowles, Reading, England.

743,309. Resilient core and tire. C. Miller, Binghamton, New York.

743,401. Means for attaching hose to coupling. H. B. Sherman, Battle Creek, Michigan.

743,409. Apparatus for administrating anesthetics. G. H. Hurd, Cleveland, Ohio, assignor to F. M. Richardson and J. F. Field, Chicago.

Trade Mark.

41,422. Pneumatic tires. Continental Caoutchouc- und Guttapercha-Compagnie, Hanover, Germany. *Essential feature.*—Two similar devices on a horizontal line, each representing a prancing horse surrounded by two circles, having arranged between them the letters "C. C. & G. P. Co." and "H." Used since February 8, 1895.

ISSUED NOVEMBER 10, 1903.

743,430. Fountain marking pen. J. Berg, New York city.

743,486. Surgical pad. G. H. Gilmore, Murray, Nebraska.

743,570. Toy. E. S. Savage, Brooklyn, New York.

743,662. Syringe. C. S. Ruckstuhl, St. Louis, Missouri.

743,721. Marine life pail [adapted to serve as an ordinary pail, as well as a life preserver, said pail being provided with an air chamber and a handle to serve as a hand grasp at the bottom thereof]. H. E. Herrendeen, Muskegon, Michigan.

743,741. Insufflator. Anna Mueller, Knoxville, Pennsylvania.

743,796. Coupling for air brake hose [comprising a car coupler, a hanger attached to the car coupler, and a support for the air brake hose adjustably attached to the hanger]. A. F. Allan and J. A. Lenhoff, Wilmington, Delaware.

743,963. Tire repair tube. T. Weighle, assignor to Diamond Rubber Co., both of Akron, Ohio.

ISSUED NOVEMBER 17, 1903.

744,073. Hose coupling. M. E. Henderson, Fort Valley, Georgia.

744,099. Vehicle tire [comprising a solid core, a rubber cushion thereabout, and an outer facing, with a series of bands of fabric for attaching the tire to the wheel felly]. C. A. Pettie, Brooklyn, N. Y.

744,100. Vehicle tire. *Same.*

744,146. Top [composed of two concentric pieces with an intermediate buffer of rubber]. G. Wilken, Englewood, New Jersey.

744,210. Tire for vehicle wheels [a rubber cushion tire having a metallic tread portion in sections]. G. Lagaehe, Akron, Ohio.

744,327. Vulcanizer. H. C. Frost and G. M. Stadelman, Akron, Ohio.

744,394. Process of making single tube pneumatic tires [by imposing a strip of canvas frictioned on both sides and of sufficient size to form the outside layer of the inner tube of the tire, upon a strip of sheet rubber of like size, so as to project over said rubber strip at one end and one side thereof; uniting said strip of canvas and rubber; securing the valve stem therein; and folding the outer edges of said composite strip over together and joining them so as to form the strip into an annular tube; then inflating the tube and rolling the outer layers of the tire thereof]. T. R. Palmer, Jeanette, Pennsylvania.

744,435. Pneumatic tire [with metallic tread portion, being of the class of tire as that by the same inventor described in THE INDIA RUBBER WORLD, September 1, 1903—(page 428)]. I. Tennant, assignor to Tennant Auto-Tire Co., both of Springfield, Ohio.

744,436. Pneumatic tire. *Same.*

744,437. Carpet renovator. J. S. Thurman, St. Louis.

744,455. Moistening device [for moistening gummed surfaces, as postage stamps]. J. T. Alwart, Chicago.

744,483. Automatic pump [for inflating wheel tires, operated by being connected with the wheel]. W. F. Carlberg, Sisseton, South Dakota.

744,493. Vehicle tire. R. M. Connable, Baltimore, Maryland.

744,574. Protecting mantle for cycle or air tubes [consisting of animal hide]. C. A. Leske, Heidburg, Germany.

744,589. Hose coupling. F. A. Moore, Garee, Pennsylvania.

744,590. Life saving device. J. Moore, Boston, Massachusetts.

744,634. Hose coupling. F. A. Silver, Millvale Station, Pennsylvania.

744,642. Fountain pen. H. W. Stone, New York city, assignor to A. A. Waterman, Winchester, Massachusetts, and W. G. Frazer and H. W. Geyer, New York city.

744,663. Tire construction. C. E. W. Woodward, assignor of one-half to Fisk Rubber Co., Chicopee Falls, Massachusetts.

Re-Issues.

12,170. Storm apron. J. C. Crimins, Indianapolis, Indiana. Original No. 715,027, dated December 2, 1902.

Trade Mark.

41,472. Rubber boots and shoes. Hood Rubber Co., Boston. *Essential feature.*—The word "Pilgrim." Used since March 1, 1901.

ISSUED NOVEMBER 24, 1903.

744,718. Massage appliance. Isabel Cassidy. New York city.

744,743. Insulated handle connection. J. H. Gault, assignor to Hero Fruit Jar Co., both of Philadelphia.

744,745. Collapsible bath tub. W. G. Gittings, Racine, Wisconsin.

744,788. Hose pipe coupling. W. Noble and B. L. Wigton, West Union, West Virginia.

744,798. Overshoe. A. E. Roberts, assignor of one half to N. P. Bowler, both of Cleveland, Ohio.

744,846. Self closing mouth for bags. G. W. Williams, New York city.

745,007. Body protector [composed in part of pneumatic shoulder protecting pads or shields for ball players]. J. Gamble, assignor to G. A. Reach, both of Philadelphia.

745,040. Pneumatic tire [provided with independent air receiving chambers, a valve common to both of said chambers, a partition between the chambers being provided with a channel leading from the valve to the said chambers, and auxiliary valves located within the chambers at the outlet of the said channels, the pressure of air in the chambers serving to keep the auxiliary valves closed]. T. J. Cooper, Paterson, New Jersey.

745,084. Eraser [for use on typewriting machines]. H. B. Tooker, New York city.

745,212. Manufacture of the cores of golf or like balls [from a tubular length of India-rubber or other elastic material]. P. A. Martin, Birmingham, England.

745,213. Manufacture of golf balls. *Same.*

745,300. Machine for making pneumatic tires. U. P. Smith, Chicago.

Trade Mark.

41,523. Insulating preparation for electrical machinery and apparatus. Massachusetts Chemical Co., Boston. *Essential feature.*—The word "Armalac." Used since 1903.

41,529. Asphaltic cements. The Barber Asphalt Paving Co., Philadelphia. *Essential feature.*—The word "Genasco."

[NOTE.—Printed copies of specifications of United States patents may be ordered from THE INDIA RUBBER WORLD office at 10 cents each, postpaid.]

THE BRITISH PATENT RECORD.

[* *Denotes Applications from the United States.*]

PATENTS APPLIED FOR—1903.

22,637. S. Butler, London. Pneumatic tire and wheel rim for same. Oct. 20.

22,682. G. Leitner, W. Bessin, and C. Passoth, London. Apparatus for charging pneumatic tires with compressed gas. Oct. 20.

22,721. R. S. Wood, Manchester. Pneumatic tire for cycles and vehicles. Oct. 21.

22,731. I. Fraser, Manchester. Revolving heel pad. Oct. 21.

22,826. Eduard Frankenberg, Manchester. Machine for vulcanizing rubber waterproof fabrics. Oct. 22.

22,888. W. Scheck, London. Resilient tire. Oct. 22.

22,934. F. Hoad, Portsmouth. Non-puncturable tire. Oct 23.

22,960. S. Butler, London. Elastic tire. Oct. 23.

22,972. R. K. Evans, London. Pneumatic tire. Oct. 23.

22,985. F. C. Weisse, London. Means for automatically inflating tires. Oct. 23.

22,986. L. L. A. Seguin and J. F. G. de Sales, London. Method of manufacturing an artificial Caoutchouc. Oct. 23.

23,002. C. de Buren, London. Golf ball. Oct. 23.

23,020. G. Hookham, London. Golf ball. Oct. 24.

23,035. J. H. Salmon, Manchester. Means for attaching rubber soles to boots. Oct. 24.

23,046. T. E. Silvester, Birmingham. Rubber sole and heel pieces for boots. Oct. 24.

23,051. T. Hunter, London. Tire inflator. Oct. 24.

23,052. G. Desclee, London. Non-slipping tire cover. Oct. 24.

23,099. C. Rawson, Manchester. Continuous vacuum drying apparatus. Oct. 26.

23,101. H. Cassel, Glasgow. Puncture proof band for pneumatic motor tires. Oct. 26.

23,105. Isidor Frankenburg, Limited; R. J. Frankenburg, and S. J. Rowe, Manchester. Waterproofing cloth. Oct. 26.

23,149. G. Gordejeff, London. Spraying device for liquids. Oct. 26.

23,336. J. B. Belavon, Belfast. Pneumatic tire. Oct. 28.

23,404. S. Butler, London. Non slipping elastic tire. Oct. 28.

23,427. C. Challiner, Manchester. Tire for heavy vehicles. Oct. 29.

23,431. E. Chatterton, F. Tannar, and J. Rendall, London. "Ante-Suckshun" revolving rubber heel pad. Oct. 29.

23,435. T. T. Spencer, London. Metal plate for revolving top pieces of heels for boots. Oct. 29.

23,513. T. Towler, Manchester. Inflatable toy. Oct. 30.

23,531. J. Mitchell, Wallingford, Berkshire. Air pump for automatically keeping pneumatic tires filled while in motion. Oct. 30.

23,542. H. Price, Birmingham. Golf ball. Oct. 30.

23,555. J. Lane, London. Tire for motor cars. Oct. 30.

23,576. J. F. Barrett, London. Filter for hose feed pipes of locomotives. Oct. 30.

23,582. E. Duerr, London. Elastic tire for vehicles. Oct. 30.

23,762. H. Byng and C. J. Jacob, London. Golf ball. Nov. 2.

23,793. R. Bridge, Manchester. Apparatus for the manufacture of rubber tubes. Nov. 3.

23,859. R. Thornton, London. Tire for road vehicles. Nov. 3.

23,879. J. Jackson, Beaconsfield, Bucks. "An advertising tyre" for use on cycles and vehicles. Nov. 4.

23,911. E. Alexandre, London. Means for preventing tire punctures. Nov. 4.

23,991. J. T. Pearson, Burnley. Tire for motor cycles. Nov. 5.

23,994. P. W. Fawcett and E. L. W. Bellhouse, Sheffield. Pneumatic tire. Nov. 5.

24,012. W. Evans, Liverpool. Improvement in mackintoshes and rain coats. Nov. 5.

24,022. J. W. Brown, London. Tire for motor cars. Nov. 5.

24,032. E. Butler, London. Elastic tire and rim for the same. Nov. 5.

*23,035. C. A. Allison, London. Tire for bicycles and vehicles. (The Fawkes Rubber Co., Denver, Colorado.) Nov. 5.

*24,036. C. A. Allison, London. Mold for tires. (The Fawkes Rubber Co., Denver, Colorado.) Nov. 5.

*24,062. V. F. Feeny, London. Seamless toy balloon. (The Rubber Balloon Co., Brooklyn, New York.) Nov. 5.

*24,155. W. I. Ferris, London. Fountain pen. Nov. 6.

*24,156. W. I. Ferris, London. Fountain pen. Nov. 6.

24,175. L. H. Swain, Keighley. Tire for road vehicles. Nov. 7.

24,187. C. Lee and W. Steane, Birmingham. Resilient tire. Nov. 7.

24,209. G. V. De Luca, London. Golf ball. Nov. 7.

24,245. W. Reid, Taunton. "Reid's" reversible heel tip. Nov. 9.

24,253. A. Cook, Quinton, near Birmingham. Puncture sealing device for pneumatic tires. Nov. 9.

24,257. R. C. MacDonald, Linlithgow, Scotland. Pneumatic tire. Nov. 9.

24,269. G. Pan, London. Fountain pen. Nov. 9.

24,320. J. Garratt, Nertherton, Dudley. Sectional rubber cushion for boots. Nov. 10.

24,322. E. B. Killen, Bangor, Ireland. Pneumatic tire. Nov. 10.

24,397. W. A. Martin, London. Heel piece for boots. Nov. 10.

24,450. J. W. White, Liverpool. Tire for vehicle wheels. Nov. 11.

24,538. B. Maddock, London, Attachment of heel pads to boots. Nov. 12.

24,556. J. Heys, Liverpool. Attachment of "wired on" elastic tires for wheels. Nov. 12.

24,686. J. G. Grose, Coventry. Elastic tire cover and manufacture of the same. Nov. 13.

PATENTS GRANTED.

[ABSTRACTED IN THE OFFICIAL JOURNAL, NOVEMBER 4, 1903.]

15,251 (1902). Pneumatic tire [for moter cars; the cover is so molded that when in position it is laterally compressed between the detachable flange rings of the wheel rim]. G. E. Heyl-Dia, Manchester.

15,287 (1902). Pneumatic tire [involving a rubber repair strip] E. B. Raper, York.

15,295 (1902). Pneumatic tire [for cycles and vehicles; rendered puncture proof by a layer of cork]. R. J. Boyce, Norwich.

15,314 (1902). Pneumatic tire [for heavy vehicles; with metal shield in segments embodied in the tread]. E. J. Buckingham, London.

[ABSTRACTED IN THE OFFICIAL JOURNAL, NOVEMBER 11, 1903.]

15,596 (1902). Hoof pad. J. Campbell, Chard, Somersetshire.

15,597 (1902). Hoof pad. *Same.*

15,598 (1902). Hoof pad. *Same.*

*15,669 (1902). Atomizer or spray producer. H. H. Lake, London. (R. Lockwood, Boston, Massachusetts.)

15,856 (1902). Golf ball [with hollow interior in which a small metal or other ball is free to move]. H. M. Singer, Dereham, Norfolk; D. Auchterlonie and W. Auchterlonie, Saint Andrews, Scotland.

[ABSTRACTED IN THE OFFICIAL JOURNAL, NOVEMBER 18, 1903.]

*16,283 (1902). Pneumatic tire [relates mainly to the means of attachment of the tire to the wheel rim]. Charles H. Wheeler and R. W. Kremer, Akron, Ohio.

*16,290 (1902). Solid rubber tire. *Same.*

16,411 (1902). Elastic tire [consisting of spring segments secured to channel shaped rims, with or without the application of rubber]. H. Carmont, Kingston-on-Thames.

[ABSTRACTED IN THE OFFICIAL JOURNAL, NOVEMBER 25, 1903.]

16,506 (1902). Hose winding machine. H. Neal, Great Grimsby, Lincolnshire.

*16,587 (1902). Life saving belt [for marine use or swimming; inflatable by means of a mouthpiece]. W. P. Tibbits, Toledo, Ohio.

16,660 (1902). Pneumatic tire [relates to means for repairing the outer cover]. E. B. Raper, York.

THE GERMAN PATENT RECORD.

PATENTS GRANTED.

147,797 (Class 39*a*). Process for making seamless rubber bags for air balloons and the like. Rubber Balloon Co. of America, Brooklyn. Nov. 4.

DESIGN PATENTS GRANTED [GEBRAUCHSMUSTER].

209,825 (Class 30*g*). Elastic band with appliances on the ends for fastening and a slip hole in the middle for clasping the neck of a nursing bottle. B. Amolin, Teterow. Oct. 28.

209,887 (Cl. 63*e*). Elastic rubber tires covered with sectional protecting tread in which the protecting leaves are interchangeable. H. Bremen, Neheimer Metallwaaren- u. Werkzeug-Fabrik. Neheim a/ Ruhr. Oct. 28.

209,888 (Cl. 63*e*). Elastic rubber tire with single metal plates overlaid with an articulated chain. *Same.* Oct. 28.

210,103 (Cl. 63). Solid rubber tire, of which the holes for the retaining wires are armed with spiral wires embedded in and vulcanized with the rubber. Vereinigte Berlin-Frankfurter Gummiwaaren-Fabriken, Gelnhausen. Oct. 28.

210,320 (Cl. 30*g*). Rubber nipple, with appliance for fastening upon neck of nursing bottle. Elizabeth Fasske, Dresden. Nov. 4.

211,043 (Cl. 63*d*). Felloe for vehicle wheels with a covering of rubber and a rim adapted to be removed. C. Menke, Mannheim. Nov. 19.

211,336 (Cl. 63*d*). Elastic tire segments with imbedded anchoring screws, said segments being of smaller radius on the under side than the outer edge of the felloe. W. Balassa, Vienna. Nov. 19.

PATENTS APPLIED FOR.

19,549 (Class 30*d*). Elastic stocking with hose-like calf and a long seam on the under side. W. Freeman and W. R. Cartledge, Philadelphia, United States. Oct. 28.

VIEWS OF RUBBER MANUFACTURERS.

I—A GOOD YEAR PAST; A BETTER COMING.

"THE year 1903 is of course the banner year in the rubber trade. From January to July the business in mechanical rubber goods was something unprecedented, and while it has fallen off some during the fall months, it still has been good. The tire business was not remarkable during the first part of the year, but it has been exceedingly good during the fall, the business for October being in excess of anything we have ever known. On the whole, I think that the year's business in rubber goods was from 10 to fifteen per cent. more than last year, and that was the best up to that time."

"How about next year?"

"I expect next year's business to be even greater. The country is prosperous, the crops good, the strikes and the depression in the iron industry about over, and the financial panic is straightening out. I see no reason for any alarm on the part of the rubber manufacturer. There is plenty of rubber to be had and the prospects are bright.

"I look for next year's business to be profitable. Orders for goods are rather over the average, and I see no reason why the manufacturers should not make money. Consumers are ready to pay fair prices for what they want. A few years ago there was a great demand for cheap bicycle tires, but the users were not satisfied, and soon learned that good honest-rubber tires were the cheapest that could be made. People are learning the same thing about automobile tires; low priced tires that were in demand a year ago won't sell at all now. The average price paid for automobile tires in 1904 will be higher than 1903, and there will be more of them sold.

"Some manufacturers seem to be alarmed about the supply of rubber. Now I don't believe that there is any liklihood of the supply giving out, or that rubber will be made abnormally high this year. Speculators may put prices up again, as they did last September, but they will not stay up, because the demand does not warrant it. I figure that the consumption of rubber for a good while to come will remain as large as it is to-day, because new uses for it are coming up all the time, but I don't look for any such great increase in the demand for rubber goods as will warrant continuous high prices for the material. Improvements continue to be made in compounding, making necessary less rubber to produce goods of the same quality, and other materials come in to displace rubber goods, all of which relieves the pressure of the demand for rubber."

II.—BUSY ALL LAST YEAR AND STILL BUSY.

"WE don't know how other factories may have fared, but we have had all the business we could do. The year has been the best we have ever known—all that we could possibly desire, even with the high price of raw material. As for next year, we have no reason to anticipate a falling off in trade. We have enough business in hand to keep us busy the first part of the year and our salesmen are making no discouraging reports. General business is in a good condition and that means good business for the rubber men.

"We found during the early part of the year that the demand for mechanical goods was going to be very large, and we provided for it in our purchases of materials. We found later that we had not misjudged the increased demand, and when rubber was so high somewhat better prices prevailed for finished goods, so our profits were all that we could expect. We do not believe that rubber next year will average as high as it has this, and there will probably be some reduction in prices of goods, but we figure that our factory will run full time all year, and that means good business for us. I cannot see why there should be any pessimists in the rubber industry."

III—TRADE LARGE, BUT PROFITS TOO SMALL.

"THIS year's business has been about the same in volume as the business of the year before. I think with some factories it would show up less and with some it would be more. But the profits have not been correspondingly large, so that the year really has not been as good as some other years. The truth of the matter is that the rubber manufacturing business has been badly cut up by competition. This has had an effect on prices, and on profits. During the present year the cost of manufacture has increased and the return for the manufactured product has not increased; in fact, it has slightly decreased. The price of rubber has averaged from 20 to 35 per cent. higher than during 1903; the price of cotton duck has advanced, the price of coal has been more for us than it was last year, for the reason that it was not as cheap last spring as it was in the spring of 1902. Hence our goods have cost more to make than last year.

"On the other hand, many more people have gone into making mechanical rubber goods of late years, and these people, in order to get business, have not only cut prices to a considerable extent, but have bid for business in all directions. There is no such thing as an old concern holding on to its business in any special lines, although every one of us have customers who will give us the preference. In all ordinary lines the new competition is sharp and returns have been less, although the volume of business has not decreased."

"What do you think the next year will show?"

"That, of course, is guess work. These are the dull months in mechanical goods, but our orders for spring deliveries have been fair and current business is coming in as well as we have any reason to expect at this season of the year. But I do not anticipate that next year is going to be any better than this. As a matter of fact, all business has been rather reacting from its high water mark during the last nine months. We are getting down to a more conservative basis, and while the rubber goods business has never had any particular 'boom' the drawing in in other lines will necessarily affect it. The financial panic, the cutting of dividends on many securities, the strikes, the increase of business troubles, all will have an effect to keep the demand for rubber goods from running far ahead.

"Still, the necessity for mechanical rubber goods becomes more and more imperative. There was a time when rubber belting, rubber hose, rubber clothing, rubber floor coverings, and other rubber staples were very much less necessities than they are now. I believe that every year adds to the standing of this kind of goods and consequently increases the demand regardless of trade conditions. So I do not look for any falling off next year; nor do I look for any 'boom.' Conservative business men will make money, but they will make less on the same volume of business than heretofore."

BY A CHICAGO CORRESPONDENT.

WHILE the demand for mechanical rubber goods in the territory supplied from Chicago has been exceptionally heavy during the past year, the trade has not been altogether satisfactory to the distributing agents in this city. That is to say, the rate of profits has hardly been commensurate with the volume of business. The demand was exceedingly good at the beginning of 1903, and continued to increase for several months at a rate which promised to make this a record breaking year. It is generally agreed, however, that laterly a decline has been experienced in this respect. As to the future, there is a diversity of opinion. The managers of some houses hold to the idea

that the present lull is only temporary and that business will pick up rapidly after New Year's. Others suggest that during the year in which a presidential election is pending, general business conditions are not likely to be so good, and that this will affect the rubber trade.

Speaking of profits, one manufacturer's agent, in analyzing the local situation, said conditions were peculiar in the Chicago field. Competition in the rubber trade in Chicago is keener than in any other part of the United States. It is far more so than in New York, for here western as well as eastern manufacturers enter into competition with the local companies. Even a California manufacturer has a selling agency here. This gentleman said that there were four times as many rubber manufacturers' agents in Chicago as in New York. Practically three blocks in Lake street are given over to rubber goods branch houses and manufacturers' agents for mechanical goods, and all of these houses are bent upon making the best possible showing in the volume of business, even if sometimes too little regard is given to profits.

Another thing, according to one member of the trade, is the fact that there is still a tendency on the part of western consumers of rubber goods to consider price before quality. This is especially true, this dealer said, among the new big industrial corporations, whose purchasing agents have not all come to realize that the better grades of rubber goods are often cheaper in the end. In order to make a good showing on the year's balance sheet, they keep down expenses at the time of purchase and let the future take care of itself.

Among those expressing a favorable opinion of the present and future of the local rubber trade is Mr. George Hawkinson, manager of the rubber department of George B. Carpenter & Co., general western agents for the Peerless Rubber Manufacturing Co. (New York). This gentleman, by the way, feels that the western consumer of mechanical rubber goods as a rule appreciates much better than in the past the advantage of buying the better grades.

"We have been working along this line for some time," said he. "Consumers are beginning to buy goods now which a year or two ago they would not even look at, considering them too high priced. Requests for bids and all specifications sent to us call for a high grade of goods. Our trade was far above the ordinary year, though it eased off during the last few months, but we always have a lull at the end of the year. Our long suit is steam packing, belting, and hose, and the indications are that there will be a much more active belting market in the coming year, with a tendency toward higher and firmer prices. I expect to see the whole mechanical rubber goods market pick up at the first of the year and go right along."

GOOD WORDS FOR THE BICYCLE.

IF there be any who think that the days of bicycling are over, they might form a new opinion after reading a collection of views on the subject just made public by Colonel Albert A. Pope, the veteran manufacturer. For many years it has been the habit of Colonel Pope to plentifully supply editorial desks with a convenient calendar, with one leaf for each day, having on each leaf an expression on the merits of bicycling. His 1904 calendar, with 366 leaves, contains extracts from that number of letters, all written within six months past, and each containing a hearty word of praise for the bicycle as pleasant, wholesome, and valuable. And the writers form a list of men and women representative of all classes of intelligent people, including business men of wide eminence, members of all the learned professions, college presidents, editors, and judges. The first letter is from the president of Harvard University, who, with Mrs. Eliot, finds bicycling agreeable and wholesome. The next are from the French ambassador at Washington, a noted Boston lawyer, a Methodist bishop, a professor of surgery, an army general, a naval commander, a United States judge, and so on—all commending the bicycle, and expressing pleasure in its use. Editor Dana, of the New York *Sun*, writes: "In country homes the bicycle is now a necessity; and whatever will help make a good wheel for little money is to be encouraged."

These letters are interesting at least in showing that some of the earlier devotees of the wheel have not lost their enthusiasm, and Colonel Pope may be counted upon—now that he is active in business again—to see to it that enough of the rising generation become bicyclists to fill the vacancies which death must soon cause in the "old guard." Whether bicycling can again be made as popular as it was ten years ago, however, is another matter, although Colonel Pope is very hopeful on this point. The rubber tire trade, it may be noted, do not share the Colonel's enthusiasm, though convinced that a certain demand will always exist for bicycle tires, and under conditions perhaps more favorable, from the standpoint of tire profits, than in some former years.

* * *

IN an interview with one of the longest established and most widely known bicycle agents in the trade, near the end of December, THE INDIA RUBBER WORLD was informed that salesmen had gone out earlier than usual, and that the orders obtained to date had been larger than even during the palmy days of the bicycle. The promise for the year he regarded as most promising. There had been an advance on all grades of wheels, and no business was being done except at a profit. He said that the American Bicycle Co. had sold a great many more wheels during its career than was generally supposed, since many people took it for granted, because the company was in financial straits, that it was doing no business. There had been a demand for bicycles all the time, but not all the business had been profitable. He felt that the demand could be and would be increased, and with the business on a new basis, a more profitable era for the bicycle manufacturers had set in.

AMERICAN RUBBER GOODS EXPORTS.

OFFICIAL statement of values of exports of manufactures of India-rubber and Gutta-percha, for the month of October, 1903, and for the first ten months of the calendar year, for five years:

MONTHS.	Belting, Packing, and Hose.	Boots and Shoes.	All other Rubber.	TOTAL.
October, 1903.....	$ 77,081	$162,311	$ 235,107	$ 474,499
January-September.	633,744	628,592	1,855,756	3,118,092
Total, 1903.....	$710,825	$790,903	$1,855,756	$3,592,591
Total, 1902.....	596,272	865,711	1,059,205	3,121,188
Total, 1901.....	502,264	733,329	1,470,176	2,705,769
Total, 1900.....	443,939	526,878	1,260,961	2,231,778
Total, 1889.....	(a)206,105	238,815	1,253,388	1,253,388

(a) Included in "All Other" prior to July 1, 1899.

The number of pairs of rubber footwear exported during the first ten months of three years past has been: 1,799,009 in 1901; 1,922,744 in 1902; and 1,704,522 in 1903.

Later returns, bringing the official record down to November 1, 1903, bring the total value of exports for eleven months to $3,944,375. The rate of footwear exports does not show any improvement.

DEATH OF MRS. E. S. CONVERSE.

THE news will be read with very wide regret of the bereavement of one of the most notable men in the trade—the Hon. Elisha S. Converse, founder of the Boston Rubber Shoe Co.—in the death of his wife, at their home in Malden, on December 16, in the sixty-first year of their married life.

Elisha Converse was not yet twenty when, in partnership with a Mr. Whipple, in the town of Thompson, Connecticut, he became actively interested in business pursuits on his own account. This business so prospered that the firm soon established a branch store in the adjacent town of Webster, Massachusetts. On the most direct road between the two stores, as Mr. Converse traveled daily to and fro, he passed, and often visited, the home of Captain Hosea Edmands, a descendant of settlers at Lynn as early as 1630, and a man of position in the community where he then resided. His activity in the state militia had rewarded him with a title by which he became widely known, and he was likewise active in the Baptist society at Webster.

There was a wedding at the home of this same Captain Edmands on September 4, 1843, for the young merchant had won the heart of the militia captain's fair daughter—his oldest child—Mary Diana, then in her nineteenth year. The ceremony was pronounced by the Rev. L. G. Leonard, pastor of the Baptist church. Mr. Converse and his bride forthwith began housekeeping in Thompson Center. About a year later he closed out his business interests there and went to Boston, in which city and its vicinity he has since led an active business career. In 1847 Mr. and Mrs. Converse were led by business considerations to make their home at Stoneham, Massachusetts; in the same year both united with the Baptist church at Malden, and in 1850 they began to make their home in the latter city.

MRS. MARY DIANA CONVERSE.
[Honorary President Ladies' Aid Association.]

It is not necessary here to recall the many ways in which the Converse family have contributed to the social life of Malden and to the general welfare of the community. As a leading business man, and as mayor and assemblyman, Mr. Converse was more or less a public character, but during more than a half century, though personally inclined to the quiet of home life, Mrs. Converse ever bore her share of social duties with becoming dignity and grace. After a time, in addition to their attractive home at Malden, the Converses acquired a home in Boston, where they usually spent a portion of each year, their son and two daughters being given an opportunity to enjoy to the utmost their taste for society. In 1893 Mr. and Mrs. Converse celebrated their golden wedding at Malden, on which occasion over 1000 invitations were issued, and the attendance was very large. The celebration was attended by Mr. Converse's sister, Mrs. Emeline Williams, who had been bridesmaid at the wedding fifty years before, and by Dr. Stephen S. Griggs (then of Brooklyn, New York), who had been best man.

The eldest of the children of Mr. and Mrs. Converse—Frank Eugene—died in early life, and it was as a memorial to him that the parents founded the first of their extensive benefactions to Malden—the Memorial Public Library. The three remaining children survive: Colonel Harry Elisha Converse, Mrs. Costello C. Converse, and Mrs. Lester Leland.

The funeral, at the Converse residence, on December 18, was attended by hundreds of residents of Malden and by many others from a distance. The mayor and the entire city government were present, and delegations from numerous social and charitable organizations of which Mrs. Converse was a member. Among the handsome floral tributes were set pieces from nearly thirty organizations. The banks and stores were closed, and business suspended throughout the city. The Rev. C. H. Moss, pastor of the First Baptist church, officiated, assisted by the Rev. Dr. W. H. P. Faunce, president of Brown University, and the Rev. H. O. Hiscox, of Albany, New York. The interment was in the family lot in Woodlawn cemetery.

RIO MICHOL RUBBER PLANTATION CO.

THE interest controlling this plantation is practically identical with that concerned in the Chiapas Rubber Plantation and Investment Co., a newer but larger enterprise, owning an adjacent plantation and sharing the same administrative offices. A recent report by President C. A. Westenberg says: "It has been a year of marked progress. Honest work has been done in cleaning out the rubber about the [rubber] trees. The place has never been in such fine condition. We have over 1000 acres now under cultivation, over 800 acres fully planted to rubber, and when I left [in November] they were transplanting on other lands from our good nurseries. Ten thousand of our trees are now four years old, and in two years can be tapped with perfect safety."——The Rio Michol Rubber Co. was organized about five years ago, being one of the pioneers in the business in Mexico. It was reorganized under the above name, and incorporated under the laws of Arizona in July, 1903, the capital being increased from $100,000 to $600,000. Mr. Westenberg is president; L. S. Sherman, vice president; E. A. Girvin, secretary; and W. F. B. Wakefield, treasurer. President Westenberg writes to THE INDIA RUBBER WORLD: "We have nearly 1000 acres [of rubber] under cultivation, and I do not believe that there is a finer plantation in Mexico. . . . . It has been the policy of the company, from its inception, to move on conservative lines. We have done no advertising. The directors have shown the proposition to their friends, and in this way we have secured sufficient money to keep us going. I presume that no corporation was ever operated more economically. Our officers are men who receive salaries from other business, and are all giving their services to the Michol gratuitously. The officers and directors are all large stockholders and therefore feel that they can afford to give their time to the management of the affairs of the company without compensation." Santiago Robinson is the plantation manager.

ALL reports are agreed as to the prominence given to motor cycles at the late cycle shows in England and to the demand for tires for such vehicles.

CANADIAN IMPORTS OF RUBBER GOODS.

THE value of imports of manufactures of India-rubber and Gutta-percha into Canada during the fiscal year ended June 30, 1903, as officially stated, shows an increase both in the imports from the United States and in the total, as has been the case regularly for several years past:

IMPORTS.	United States.	Great Britain.	Other Countries.	Total Value.	Duties Collected.
Boots and shoes	$ 141,718	$ 555	$ 15	$ 142,288	$ 35,254.76
Belting	60,382	16	....	60,398	15,112.67
Clothing and waterproof cloth	54,276	411,092	86	465,454	102,891.11
Hose	42,732	859	2	43,593	15,059.01
Packing and mats	46,011	567	102	46,680	16,230.10
All other	228,302	33,722	25,374	287,398	69,325.50
Total	$573,421	$446,811	$25,579	$1,045,811	$253,873.15
Total, 1901-02	$525,218	$217,812	$ 31,999	$775,029	$201,698.64
Total, 1900 01	434,590	154,944	21,738	611,272	163,012.44
Total, 1899 00	401,867	118,111	19,083	539,061	149,006 80
Total, 1898 99	359,037	119,523	15,130	463,690	134,717.69

The imports for 1902-03 other than from the United States and Great Britain—mostly classed under the heading "All Other"—were from the following countries:

Germany	$22,090	Austria-Hungary	$1,005	Russia	$54
France	1,990	Belgium	425	China	15

IMPORTS OF WATERPROOF CLOTHING AND WATERPROOFED CLOTH, FOR SIX YEARS.

FROM—	1897-98.	1898-99.	1899-00.	1900-01.	1901 02.	1902-03.
Great Britain	$110,464	$91,643	$88,426	$117,754	$179,937	$411,093
United States	35,230	59,894	64,138	52,219	54,020	54,276
Germany	570	252	213	7	158	45
France	208	53	14	20	72	—
Other countries	30	—	—	—	—	41
Total	$146,502	$151,842	$152,791	$170,000	$234,187	$465,454

There may also be noted the imports of the following articles, not classified by the Canadian customs as "rubber goods," but having a relation to the industry:

IMPORTS,	United States.	Great Britain.	Other Countries.	Total Value.	Duties Collected.
Webbing, elastic and non elastic	$110,896	$48,148	$5,349	$164,393	$29,810.51
Stockinettes for rubber footwear	46,233	11,420	....	57,653	8,091.50
Duck, for rubber belting and hose	272,137	1,797	...	273,934	free.
Rubber thread	4,458	....	...	4,458	free.

The imports of duck were just twice as large as for the preceding year, doubtless due to the movement on foot at one time to have a duty imposed on duck, and the desire of consumers to anticipate the operation of the proposed law.

Exports of Canadian rubber manufactures show a marked decline from the figures for 1901-02, when exports to the United States were stated at $189,664—presumably for the most part to Alaska. The distribution of rubber exports for 1902-03 was—

To—	Value.	To—	Value.	To—	Value
Great Britain	$44,741	Belgium	$2,963	Turkey	$ 1,439
Australia	41,584	Chile	3,080	United States	6,556
New Zealand	17,037	China	10		
Newfoundland	12,860	France	2,379	Total	$142,891
British Africa	323	Germany	881	Total, 1902	322,572
Brit. E. Ind.	1,180	Italy	2,169	Total, 1901	151,656
Brit. W. Ind.	793	Japan	12	Total, 1900	170,488
British Guiana	1,332	Norway-Sw'n	46	Total, 1899	133,332
Hong Kong	710	Spain	119	Total, 1898	77,685
Aus.-Hung'y	1,311	Switzerland	1,366	Total, 1897	26,121

RAW MATERIALS.

THE customs returns embrace the following details in relation to crude India-rubber and allied materials. Of the items in the table, other than India-rubber and Gutta-percha, no matter how enumerated in the customs returns, it is evident that the greater part is reclaimed rubber, produced in the United States:

CLASSIFICATION.	Pounds.	Value.
Gutta-percha	2,675	$ 4,375
India-rubber	2,858,778	1,532,998
Rubber, recovered; rubber substitute and hard rubber in sheets	1,745,130	210,464
Rubber powdered and rubber waste	797,541	72,217
Total, 1902-03	5,404,124	$1,820,054
Total, 1901-02	4,792,088	1,653,704

IMPORTS OF RAW MATERIALS FOR EIGHTEEN YEARS.

YEARS.	India-rubber and Gutta-percha.	Recovered Rubber and Substitute.	TOTAL.
In 1885-86	739,169	19,499	758,668
In 1886-87	785,040	46,508	831,548
In 1887 88	1 225.893	88,471	1,314,364
In 1888 89	1,669,014	221,674	1,890,688
In 1889 90	1.290,766	147.377	1,438,143
In 1890 91	1,602,644	8,254	1,610,898
In 1891-92	2,100.358	106,080	2,206,438
In 1892 93	2,152,855	195,281	2.348,136
In 1893 94	2,077,703	529,900	2,607,603
In 1894 95	1,402,844	611,745	2,014,589
In 1895-96	2.155.570	643,169	2,798.745
In 1896 97	2,014.896	1,061,402	3,076,298
In 1897-98	2.457,321	1,316,494	3,773.815
In 1898 99	2,602.321	2,018,552	4,620,873
In 1899 1900	3.004.828	2.086,952	5.091,780
In 1900 01	3.016,862	1,907,975	4,924,837
In 1901 02	2,911,438	1,881,650	4.793,088
In 1902 03	2,861,453	2,542.671	5,404,124

There were exported during the fiscal year, principally to the United States, 1,806,023 pounds of old or waste rubber, valued at $122,730 [averaging 6¼ cents per pound], of which 76,972 pounds are described as "not the produce of Canada."

SOME EARLY TRADE STATISTICS.

AN old volume of United States commercial statistics—before Canada had rubber factories—contains details in regard to the imports of rubber goods into British North America, in the year 1849, which may be tabulated as follows:

	Value.
Montreal.—India-rubber shoes (498 pairs)	£229 6 3
St. John.—India-rubber boots and shoes (28,330 pairs)	Not stated
Brockville.—Manufactures of India-rubber	432 0 0
Kingston.—Manufactures of India-rubber	483 18 1
Hamilton.—Manufactures of India-rubber	277 17 6
Coburg.—Manufactures of India-rubber	22 0 2

All were credited to the United States, except £91 worth of Brockville imports from Great Britain.——Other details from the same volume, for the year 1845, follow:

Nova Scotia.—India-rubber shoes, 126 cases, value £565, of which £545 from the United States and the remainder from British North American ports.

Newfoundland.—India-rubber goods, value £212, of which £185 from the United States and the remainder from Great Britain.

Cape Breton.—Exports of 17 cases India-rubber goods, value £105, to other British North American ports.

St. John, New Brunswick, in 1848, imported 24,653 pairs of India-rubber boots and shoes. Newfoundland, in 1849, imported India-rubber goods: From the United States, £484; other North America, £222; Great Britain, £49; total, £755.

New York exports by sea to Canada in 1847 included 400 pairs of rubber boots and shoes, valued at $300, and in 1848, 2199 pairs. Boston exported to Canada, in 1847 India-rubber shoes valued at $1948; in 1848, $352; in 1849-50, $644. The goods referred to in this paragraph, however, were described as "foreign merchandise," which could have been only the crude Pará made rubber shoes.

A GOOD trade in hard rubber ornaments exists in Liberia, according to a report by the British consul there, to the Liverpool chamber of commerce, including bracelets, which the women buy from peddlers at 6 pence each. The *Gummi-Zeitung* mentions that these are made in Hamburg.

THE RUBBER TIRE OUTLOOK FOR 1904.

WHILE automobile manufacturers have been puzzling their brains to perfect some parts of their machines for the season of 1904, in order to have something that will be just a little better than anything the "other fellow" may have, the makers of automobile tires have also been busy, studying to bring out the best methods of tire construction, with the result that several new things will be seen the coming season, which will not only add to the durability and stability of the tire, but will add to the safety of the users of the new tires. For one thing, as a result of recent accidents on account of tires pulling off or slipping during bursts of speed, the majority of the 1904 tires will probably be equipped with better facilities for attaching them to the rims than the tires of last year. In addition to distinct improvements in tire construction, the rubber trade seems in a way to benefit largely from the recent agreement entered into with regard to the proper requirements of tires for automobiles of different types and weights, in order that the best possible results may be attained. Some of the tire makers, however, are waiting for the national automobile shows this month before announcing fully their new features for the 1904 trade.

While the question of new tires is being discussed, the comparative merits of the single tube and the clincher or detachable tire come in for no small amount of attention. From all appearances the latter type of tire is going to be the most popular, though it will probably never entirely supersede the single tube.

"The clincher tire is THE tire," said one manufacturer to an INDIA RUBBER WORLD representative. "We find that the demand for the clincher or detachable tire is greatly in excess of the demand for the single tube. The former has everything in its favor. So simple in construction and so easy to repair, the man who owns an automobile feels safer when he uses it than when using the single tube. He laughs at punctures. With a comparatively inexpensive outfit he is his own repairer, and soon mends a puncture which would be a puzzler to the man who uses a single tube. Should the inner tube wear out, replacing it with a new one is an easy thing, while the single tube, except in the case of a simple puncture, must go back to the factory. The outer casing may be punched full of holes, and yet give good service as long as the inner tube is in good shape, while with the single tube, one little hole may cause hours of trouble, and spoil many a pleasure trip.

"Many who remember how unpopular the clincher bicycle tire proved to be may wonder at this, but the automobile and the bicycle tire are two entirely different propositions. Cyclists soon found that with a little cement and a handy little rubber plug they did not need to fear punctures, and that they could repair any ordinary puncture by this method more quickly than they could take the detachable tire from the rim and remove the inner tube. Then, as a last resort, the single tube could be 'juiced,' prolonging its life several weeks and even months. With an automabile tire it is different. It is much more unwieldly, and the methods pursued by the cyclist to repair his tire would not avail the *chaffeur* stalled in a country road perhaps 50 miles from a town where he can secure the necessary materials to make permanent repairs. A bicycle weighing perhaps 26 pounds, and carrying from 150 to 185 pounds, is a very different thing from a heavy touring car. So it will be readily seen that the argument used in favor of the single tube for bicycles does not apply to automobiles. Imagine 'juicing' an automobile tire and expecting it to perform its functions!"

The tendency is illustrated by the fact that tires of the clincher type are now to be offered for the first time from several important factories. Morgan & Wright will make a motor tire on the clincher principle, which is to involve specially treated fabric, designed to lessen any liability of separation of the plies of fabric. The tire is recommended as fitting the rim snugly, to prevent its becoming loose under severe strain. Besides, it has an especially tough casing and an extra heavy tread. A sectional cut of the Morgan & Wright tire is given herewith.

The Hartford Rubber Works Co. also will market this year, for the first time, a clincher automobile tire. This will be produced under license from The G & J Tire Co., as is the case with the new tire of Morgan & Wright.

Some new features are promised in the G & J tire itself, and new tires will be exhibited at the Automobile shows by the India Rubber Co. and the Indianapolis Rubber Co.

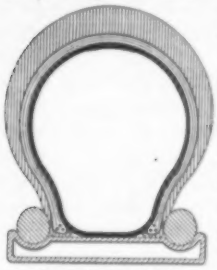
The B. F. Goodrich Co.'s "leader" for 1904 will be, as last year, of the clincher type. The tire, while apparently not changed, still is believed to work a distinct improvement, in respect to strength and durability, through the choice of matetrial and details of workmanship, while it will be every bit as fast as their former products—a feature which is not entirely overlooked by automobilists when they purchase new tires.

An important feature of the new tire to be placed on the market by the Diamond Rubber Co. relates to the lug. The new tire, instead of having a leather covered lug, will have one made entirely of rubber, designed to permit a more perfect adjustment of the tire; and to prevent, in large measure, the possibility of a tire slipping or pulling off the rim. The rubber lug takes the place of 16 different styles of leather covered lugs which were used last season by this company in their different styles of tires. The new tire is also equipped with a bevel screw which will permit of a more secure tightening of the tire than was possible in the 1903 tire. Tires will also be fastened with a wrench instead of a thumbscrew, showing that every possible precaution will be taken to prevent accidents through tires pulling off or slipping when sharp turns are made. Moreover, the new tire is reinforced at every point where it is liable to be subjected to wear, and is calculated to stand the greatest possible strain on track or road without giving way.

The Goodyear Tire and Rubber Co., in addition to their regular clincher and single tube tires, which will be offered this season with practically no changes, are putting out a new tire, to be called the "flat tread" clincher, aimed to correct the tendency to slip on wet pavements or in making sharp turns. The company are also experimenting with a new tire, now being tested on a big touring car at Akron, by the use of which, the inventor claims, less power will be required for operating an automobile. The novel feature of the tire relates to the weaving of the fabric used.

The Dunlop motor tire for 1904 presents a decided new feature in construction. Its object is to facilitate the attachment and detachment of the outer cover, practice having shown this manipulation to be more difficult than in the case of the detachable cycle tire, on account of the greater size, weight, and thickness of the parts. The rim to which the new tire is adapt-

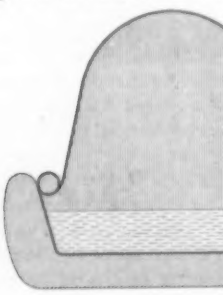
ed is a flat channel, either edge of which consists of a metal ring encircling the wheel; against these edges the wires of the tire cover impinge and obtain the bearing which holds the cover in place. Each ring has a turnbuckle, by means of which they are made larger or smaller in diameter, thus permitting them to be slipped off, or clamped in position, as the case may be. With either ring removed, the tire may be pushed off the rim, easily and quickly, the only tool required being a small punchlike steel instrument with which to work the turnbuckle. A nail could be made to answer the purpose. A better fit of the tire is claimed, producing less friction and wear, and adding an element of safety. The tire does not have to be squeezed or pressed into place but after being taken off is simply laid back in the groove and the detached rim fitted on. Incidentally, the new outer cover has been changed somewhat in section, which results in a better distribution of the tension on the cover and renders it less liable to puncture. The new Dunlop feature is made under a United States patent issued last year and is manufactured exclusively by the Hartford Rubber Works Co., which concern controls the patent. Numerous experiments were made at Hartford during the fall with the tire before it was placed on the market, and with the most satisfactory results. Among other things the tire was run 10 miles over indifferent roads, absolutely deflated. The only evil result was that the tire crept to some extent and the valve stem was cut. The tire did not come off and showed no very serious wear. These tires are being made very heavy on the tread and of a high quality of material, and are consequently rather expensive running from $175 to $240 per set.



NEW DUNLOP TIRE.
[Sectional Cut.]

NEW DUNLOP TIRE.
[Tire on Rim, with one Retaining Ring Removed.]

The Manhattan Rubber Manufacturing Co. (New York) will actively push the MacMahon solid rubber vehicle tire this year. As shown in the accompanying sectional cut, this tire is held in place by two longitudinal wires which run on the outside next to the rim flanges and fit over projections on the rubber. This gives a solid rubber tire without any holes for restraining wires, and one that can be run until it is worn down from the outside. The MacMahon tire is set in the channel up n a fabric base, which is another distinctive feature. This is designed to do away with the tendency to escape from the retaining device which appears when more rubber than is actually necessary is forced into the channel. It also obviates any tendency to creep, and it permits the tire to carry its load naturally without being compressed against the rim flanges. It is claimed that the fabric base of this tire will remain practically in exactly the same position in which it is put on the wheel until the tread is entirely worn away. The tire weighs lighter than other tires of similar capacity, and therefore is comparatively less expensive. The tire is made in all standard sizes for vehicles, from the light road wagon to the heavy truck. It is made to fit the standard channel. There is no resetting necessary, for the tire holds throughout its life in the same shape and there is no wearing or cutting by wires.



MAC MAHON TIRE.

NEW DUNLOP TIRE RIM.

The Tennant Auto-Tire Co. (Springfield, Ohio) are reported to be actively organizing their trade, for 1904, in the automobile tire patented by Irving Tennant and described in THE INDIA RUBBER WORLD of August 1, 1903 (page 428). The tread of this tire is protected against punctures by an annular flat metallic strip, lying between two layers of fabric. Manufacturing arrangements have been made with the Springfield Rubber Co.

MORGAN & WRIGHT DETACHABLE TIRE.

The Fawkes rubber tire, which is being exploited from Denver and has been illustrated in THE INDIA RUBBER WORLD, will be exhibited at the Automobile shows. This belongs to the cushion type of tires, to which new additions are constantly being made, and it appears that this season will witness a more active campaign than for sometime past in behalf of tires of this class. It is recognized, of course, that the best pneumatic tire is liable to puncture in an emergency, and there are many automobilists who feel that the solid tires, while free not liable to punctures, do not afford sufficient resiliency.

NEW DIAMOND TIRE LUG.

TIRES AT THE ENGLISH CYCLE SHOWS.

THE PALMER TYRE, LIMITED, exhibited at the Stanley show the most marked new feature of the season, in the shape of the "Palmer Cord" motor tire, a result of experiments for some years at the Silvertown works of the India-Rubber, Gutta-Percha, and Telegraph Works Co., Limited, the manufacturers of the Palmer cycle tires. The "Palmer" was the first tire in which was made the important departure of employing a specially designed fabric to obtain what was required in a pneumatic tire. The manufacturers have further developed the same principle in meeting the special wants in the way of a pneumatic tire for use on motors and other heavy vehicles. Uniformity of tensions in a motor tire has been recognized as a most important factor, and most difficult to obtain in a canvas lined tire. It has been found almost impossible, in building large tires, to so arrange that the threads (warp and weft) in the different layers of canvas shall be of equal tension everywhere, and one of the illustrations herewith (Figure 1) is intended to illustrate the distortion of a tire which results from the employment of ordinary methods of manufacture. An end aimed at in the manufacture of the Palmer Cord tire has been the arrangement of all the threads so that the strains are direct; there are no slack threads and the tensions on all the threads are uniform. This requirement has been found to be more easily met by the use of few than of many layers of fabric, and the standard Palmer construction now involves only two layers. In vulcanizing tires, it was discovered at Silvertown that the air contained in the fabric or canvas expands considerably under the increased temperature, the expansion preventing the rubber from making a good contact with the thread, besides tending to an accumulation of air at points where the pressure happens to be least, and thus causing weak places in the tire. As a result of such discovery, experiments were undertaken which have resulted in the production of a cord from which all air has been expelled. The cord used in the new Palmer tire is composed of a number of fine threads, each one of which has been individually treated by a patent process, the final result being a cord composed of 24 threads, each of which is insulated from every other thread by India-rubber applied in the form of solution, and from which the air has been expelled. A further step is the flattening of these built-up cords, in order to produce a fabric more compact than where round cords are used. Another illustration (Figure 2) shows the position of the cords in the formation of a section of outer cover built up of two layers of flattened cord, indicating how, in spite of the circular form of the tire, an equal degree of tension is obtained throughout. The anchoring of the cord to the beaded edges of the tire cover is by means of steel pins passing through the loops of the cords and into the canvas bead. Two methods of attachment to the rim are (1) the ordinary clincher style, in rims fitted therefor; and (2) the flange fixing type illustrated herewith (Figure 3.)

FIG. 1.

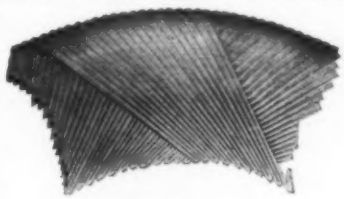
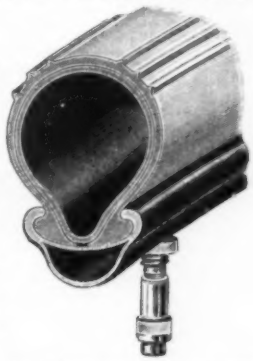


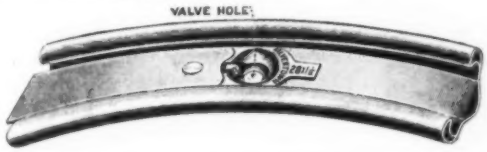
FIG. 2.

FIG. 3.

The Palmer company exhibited also their detachable cycle tires, a sectional cut of which is shown herewith. Still another illustration relates to the Palmer tubular rims for cycle tires. Instead of using woven tape for covering the heads of the spoke nipples with this rim, a steel tape is supplied which forms a smooth surface to support the edges of the tire. The ends of this steel tape are secured by a special patented fastening, shown in one of the accompanying cuts.



PALMER DETACHABLE CYCLE TIRE.



FASTENING OF "SILVERTOWN" STEEL RIM TAPE.

STEEL TAPE FOR PALMER CYCLE TIRE.

THE CONTINENTAL CAOUTCHOUC AND GUTTAPERCHA CO. (London and Hanover, Germany).—Their exhibit of "Continental" motor tires included the set used by Mr. Jenatzy on the car with which he won the Gordon Bennett race last year; a full assortment of their standard tires; and numerous motor and cycle accessories made at their Hanover works. An illustration herewith gives a sectional view of the "Continental" tire for 1904.

THE CLIPPER PNEUMATIC TIRE CO., LIMITED (Coventry).—Bicycle tires, and the "Clipper-Continental" motor tire. The latter is made at Hanover by the Continental company and sold in Great Britain, under a license from the owners of the Bartlett-Clincher patent, the Clipper company being sole agent for the Continental company for motor goods.

CONTINENTAL TIRE.

THE DUNLOP PNEUMATIC TYRE CO., LIMITED (London—works at Birmingham) made exhibits at both the National and Stanley shows. The chief innovation for 1904 consists in a new and improved non slipping cover. Experience having proved the liability of the crevices in the tread of a tire to fill up, and of the design to become obliterated, the Dunlop company have decided to furnish a non slipping tread of longitudinal ridges, reinforced by transverse projections which prevent these ridges splaying apart and quickly wearing off. This effect is produced by molding the words "The Dunlop Tyre"

THE NEW DUNLOP TIRE.
[Made also with "Clincher" Attachment.]

at intervals round the tread of the cover, the letters of the name serving as the transverse projections which hold the ridges in position and minimize their wear. Besides producing an effective non slipping tread, a new means of identification of Dunlop tires is produced which may serve the company a good purpose in view of the new imitations of their tires likely to result from the expiration of their patents in the near future. Illustrations are shown here of a Dunlop cycle tire in each of the two types—"Dunlop-Welch" and "Bartlett" methods of attachment, one using wires and the other beaded edges in the tire cover—with the new tread markings.

The price of a pair of Dunlop cycle tires (cover 28"×1¾") complete is now £2 5s. [=$10.95]; in 1898 it was £4 [=$19.45.] The price of an outer cover has declined meanwhile from 30 shillings to 17 shillings 3 pence.

The Dunlop tire was also shown in special makes for motor cycles and automobiles, together with various rubber accessories for cycling and automobiling.

The Dunlop inner tube is now molded in a circle, to the end that it may be at even tension at all points; the inner circumference is therefore not wrinkled nor the outer circumference stretched in putting the tire tube in place.

The company thus refer to an American invention for the curing of tires: "In 1901 a specialized method of manufacture was discovered, and the patents purchased by the Dunlop Tyre company. After making extensive tests in all countries and climates, over a period of 18 months, the company adopted this scientific method by which tire covers are made by patented machinery."

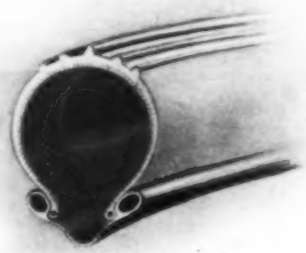
THE AVON INDIA RUBBER CO., LIMITED (Melksham, Wiltshire).—The "Avon" single tube motor tire, described as being in construction "similar to the American single tube tires"—though more durable—and adapted to "any American single tube motor rims," but fitted with an English (Lucas) valve; molded under great pressure; Egyptian cotton used; attached to rim with 5 screws; made in one size only—28"×2⅛". *Also:* Inner tubes for motor tires, in red and gray rubbers, molded in circular form; the "Coronation" solid rubber motor tire, molded and vulcanized in circular form; "Lovelace" non slipping tire treads; special vulcanizing process for pneumatic motor tires.

THE NORTH BRITISH RUBBER CO., LIMITED (Edinburgh).—Exhibited at both shows the "Bartlett-Clincher" tire, for cycles, motor cycles, and automobiles. Special attention was called to the motor cycle tire, constructed with a view to the peculiar needs for strength and resiliency in the equipment of this new class of vehicle. An illustration is given here of a section of the "A Won" tire for motor cycles.

NORTH BRITISH CLINCHER TIRE."

THE MIDLAND RUBBER CO., LIMITED (Birmingham).—"Midland" and "British" detachable bicycle tires, fitted with endless wires, under the Dunlop-Welch patents; the "British" tire also made with beaded edge, under the Dunlop-Bartlett patents. *Also:* "Midland" pneumatic motor cycle tires. The tires are described as being made by "a patented vulcanizing process"—evidently meaning the American invention controlled in England by the Dunlop company.

THE CLIFTON RUBBER CO., LIMITED (Birmingham).—Exhibited tires manufactured under license from the Dunlop company—the "Wapshare," fitted with endless wires, and the "Clifton," with beaded edges, in place of the old Wapshare



THE "WAPSHIRE" TIRE.

tire attachment, where the wires extended through the rim and were fastened by screw nuts. *Also:* The "Clifton" detachable inner tube—a new article—made in a straight length, with two closed ends which interlock by inserting one within the other. It appears to possess special convenience for motor cycles, being removable from the outer cover without taking off the wheel.

LE PARIS TYRE CO., LIMITED (London).—"Le Pâris" patent double tube—not detachable—bicycle tire, with or without puncture proof band, especially for path racing. For 1904 single tube and detachable motor tires are announced.

THE TEXTILE GOODS MARKET.

THE price of raw material has reached an altitude not recorded since 1875, and there are predictions that cotton will go to 15 cents, and possibly higher, before a new crop comes on. A bale of spot "middling" cotton in New York at this writing is valued at 14.10 cents a pound, while at this time last year it was worth 8.85 cents, making a difference of $26.25 a bale. The 14 cent mark was passed on December 28, when that price was bid for March, with all the later months up to August much higher. The "bull" leaders have millions of dollars at their back, while the "bears" have been greatly weakened by their heavy losses, and it seems to be a case where the "money makes the mare go."

The statistical position or any other factor is quickly swept aside by the tremendous manipulation of the bull faction. They have not hesitated to liquidate large accounts, for just as soon as the market was seen to sag a little they stepped in and buoyed it up by a spurt of buying. The manipulators take out their profits from time to time only to again invest them, and like a rolling snowball they increase in size. It is contended by many while admitting that the crop of cotton is short, the prices are too high for this time of the year, and yet they fail to suggest something that will break them. They hope to see them topple over from becoming top-heavy. Following are the prices of cotton middling upland spots at the leading ports:

	New York.	New Orleans.	Liverpool.
December 1	11.95 cents	11.50 cents	6.40*d.*
December 8	12.50 cents	12.25 cents	6.46*d.*
December 15	14.45 cents	12⅛ cents	6.74*d.*
December 22	13.30 cents	13 cents	7.06*d.*
December 29	14.10 cents	13⅜ cents	7.46*d.*

The market for duck and sheeting has followed in the wake of staple cotton, although it cannot be said that the goods have advanced in proportion to the staple. The cotton duck mills have instructed their selling agents in this market to withdraw all prices, and to refrain from accepting contracts at current rates. About two thirds of the rubber trade using duck have made their yearly contracts, while the remainder are buying only for immediate requirements. In the latter case they are paying from 22 to 24 cents per pound, while those who made contracts a month ago secured their supplies for the year at 20½ cents.

The duck mills are closing up last year's contracts. They have enough cotton on hand to carry them along into the spring, or at least a sufficient quantity to cover the contracts in hand. This cotton was bought at below 10 cents, doubtless, and now that the manufacturers are compelled to pay approximately 14 cents, they are of course obliged to advance the price of their product.

The representative of a concern supplying the rubber trade with cotton duck said to an INDIA RUBBER WORLD reporter: "I have endeavored in a great many ways to persuade the rubber people to contract for their supply of cloth before the price advanced, as it seemed from every conceivable standpoint that cotton was to reach a high level before the spring, but these consumers sneered at the suggestion. I have recently received contracts from rubber mills for duck at 23 cents per pound, while the same goods were offered them a short time ago at 20½ cents. Of course, they admit that they made a mistake in not taking my advice, but they were the buyers and I was the seller and we were looking at prices from an entirely different standpoint. Then too, the rubber manufacturers are inclined to accuse us of being too narrow in respect to our credit system. If we have changed our method of extending credit, and are not as liberal as formerly, there is good reason for it, and it certainly will not militate against their interests. Now that we have withdrawn our prices, consumers will be compelled to pay for what goods they take, as the withdrawal of prices does not necessarily mean that we will not contract to supply the consumers, but they will be compelled to pay a price based on the cost of cotton from which their goods are to be made."

PRICES CURRENT FOR SHEETINGS FOR THE RUBBER TRADE.

	Pick.	Yds. to Lb.	
36″ Household Favorite		6	cents.
40″ Household Favorite		6⅝	cents.
36″ Henrietta, L. L		5⅞	cents.
39″ Henrietta, H		(net) 5½	cents.
38½″ Henrietta, S		(net) 5	cents.
40″ Henrietta, P. W		7¼	cents.
36″ Florence C		4¼	cents.
40″ Majestic C. C		(net) 8¼	cents.
40″ Majestic B. B. B		" 7¾	cents.
40″ Majestic B. B		" 7¼	cents.
40″ Norwood		" 5½	cents.
36″ India, A. A. A		" 7	cents.

Sheetings.					
40″ Highgate	6¾c.	40″ Selkirk	8 c.	40″ Shamrock	10 c.
40″ Hightown	7 c.	40″ Sellew	7¾c.	*Ducks.*	
40″ Hobart	7¼c.	48″ Mohawk	11 c.	40″ 7 oz. Cranford.	10 c.
40″ Kingstons	8 c.	40″ Marcus.	6½c.	40″ 8 oz. Chartres	10½c.
39″ Stonyhurst	6 c.	40″ Mallory	6 c.	40″ 10 oz. Carew.	13 c.
39″ Sorosis	5¾c.	36″ Capstans	4½c.	40″ 11 oz. Carita.	14 c.
40″ Seefeld	8¾c.	*Osnaburgs.*			
		40″ Iroquois	10 c.		

HYDROCARBONS IN RUBBER COMPOUNDS.

THE term "hydrocarbon" is a convenient chemical designation for any compound containing only hydrogen and carbon. The use of the term is frequent in connection with the rubber industry, for the reason that certain groups of such bodies, both native and artificial, have been for years in common use as ingredients in rubber mixtures. Typical among such mixtures may be mentioned tar and pitch, from the destructive distillation of wood or bituminous coal, and, in more recent practice, the natural bitumens, such as Asphaltum ("mineral rubber"), Gilsonite, and other similar substances.

The adaptability of these substances to rubber compounding is due to their possessing to a greater or lesser degree certain physical resemblances to India-rubber—especially plasticity and low melting point. These characteristics permit the bitumens to be easily combined with rubber and earthy matters, and in this way they assist very considerably the mixing of what otherwise would be over-compounded and utterly unmixable stocks.

Being practically proof against oxidation and inert to chemical action, the presence of these hydrocarbons is entirely harmless in a rubber compound as affecting the life of the stock. They may be credited with actually having a beneficial effect, inasmuch as they not only add plasticity to the stock and retard its rapid drying before vulcanization, but they fill the space of, and thus exclude, much of the air which is always included, to a considerable extent, in every rubber mixing. By thus displacing air, which would otherwise be enclosed in the stock, the hydrocarbons practically lessen the internal oxidation of the cured rubber, and in consequence the life of the goods is lengthened.

While these hydrocarbon stocks have a recognized place and value in the rubber industry, they ought always to be considered as "assistants" or "doctors" rather than substitutes for rubber, which they are not. In employing them the manufacturer should do so with proper regard to the adaptability of the resulting compound to the purposes intended. Thus employed such materials have their legitimate uses, and may be regarded as valuable compounding ingredients.

THE RUBBER TRADE IN AKRON.

BY A RESIDENT CORRESPONDENT.

TO THE EDITOR OF THE INDIA RUBBER WORLD: According to the statement of prominent rubber manufacturers in this city, the declining activity which has been noticeable for the past month or so in many other lines of trade has not materially affected the rubber branch. It will be remembered that the rubber manufacturers of Akron did not have a slack season the past summer, and the present comparative dullness makes up for the time which should have been slack and was not, and gives the manufacturers a chance to overhaul machinery. The rubber factories have enjoyed during 1903 the best trade in many years, and they do not object to being less busy just now. They do not believe that the period of quiet will continue beyond the stocktaking at the end of the year, and all are optimistic over the prospects for the season of 1904. Advance orders for tires have been received in such quantities that there is every reason to believe that next year will be a good one, and in other lines the rubber manufacturers here are confident in regard to the trade of 1904.

* * *

ATTENTION again has been called to the "blacklisting" case of Peter Kiefer, who sued the Diamond Rubber Co. for $1,995, for the alleged act of the defendant in placing his and other names upon a blacklist, it being further alleged that this was done because they were members of a labor union. The Diamond Rubber Co. have filed another answer to the suit, in which they deny all the allegations of the complaint, except the ones which allege that the company are engaged in the manufacture of rubber goods, and that there are other companies of the same kind in Akron. They also acknowledge that the plaintiff was at one time an employé of the company, but is not now. As was mentioned in THE INDIA RUBBER WORLD, the company recently filed a demurrer to the suit, in which the company sought to have the evidence of the plaintiff thrown out and the case dismissed on the grounds that an employer should not be required to give a reason for discharging an employé, basing their contention upon a decision in the supreme court of this state in the case of Schaeffer *v.* the New York, Chicago and St. Louis Railroad Co. Judge A. R. Webber, before whom the demurrer was tried, conceded the right of the company to discharge employés without giving a reason therefor, but held that "employés have a right to organize for their mutual benefit," and therefore refused to prevent Kiefer from submitting his evidence in the case. The filing of the present answer was simply a customary legal procedure which has little or no bearing on the case.

* * *

JUDGE KOHLER, sitting in the court of common pleas at Akron, December 11, overruled the motion for a new trial in the action commenced by Addison McClurg against the Diamond Rubber Co., and set aside the decision of the jury which had awarded McClurg $3000 damages. McClurg is suing the company for $20,000 damages for injuries alleged to have been sustained in the plant of the defendant company. The jury awarded him $3000, but Judge Kohler dismissed the verdict, stating that it was too small. In passing upon the motion he said: "To a young man of good habits, between the age of 21 and 25 years $3000 is no just compensation for the loss of a right hand. If the jury had awarded the plaintiff $10,000 I would not have interfered with the verdict. If the jury found that the plaintiffs were negligent, and I suppose that they did or they would not have returned a verdict for the plantiffs, they should have done the young man justice, and returned a verdict that would have compensated him for the loss of his hand."

* * *

AFTER an effort covering two years Colonel George T. Perkins, president of The B. F. Goodrich Co., has at last seen the consummation of his dearest wish. The city council has accepted a beautiful park which Colonel Perkins has been trying to present to the city for two years. During this time the proposition has twice been voted upon, adversely, but Colonel Perkins felt that eventually the Akron people would see the advantage of owning such a beautiful park, and that he was right is evidenced by the fact that favorable action looking toward the acquisition of the property has been taken. It consists of 76 acres, and is located on Perkins Hill southeast of the city. Just west of the park is the home of the late John Brown, the famous abolitionist, now used as a club house by the Portage Golf Club. Colonel Perkins's gift carries with it a stipulation for a macadamized road to cost $20,000, and this was the stumbling block until now. Near the park are the beautiful homes of Mr. Bertram G. Work, vice president and general manager of the Goodrich company, Mr. R. P. Marvin, secretary of the company and Mr. C. B. Raymond, manager of the Akron plant of the American Hard Rubber Co.

* * *

MR. H. B. CAMP, president of the Camp and Faultless rubber companies, recently became interested in coal mining, and with other local capitalists purchased a large tract of coal lands in Perry county, in southern Ohio. Preparations were made to open a large mine, but when the railway which carries coal out of that district was asked to run a switch to the mine, it was found that the owners of the railway were in interest with the Continental Coal Co., owners of the other mines in that district, and the extension was refused. Mr. Camp and his associates thereupon quietly secured right of way for a steam railroad from Logan to McConnelsville, and have obtained a charter from the state for the Indian Run Railway Co., and it is proposed to build a road to give an outlet for the new coal mine. The incorporators of the railway company are H. B. Camp, his son L. W. Camp, F. M. Atterholt, G. P. Wise, and H. E. Andress, all of Akron. Once before Mr. Camp had trouble with a railroad company over rates and built the Ashland and Wooster railway, of which he was president, general manager, and superintendent. The road was operated at a profit for several years and then sold.

* * *

THE manufacture of rubber bowling balls promises to become an important feature of the hard rubber industry. THE INDIA RUBBER WORLD has already reported the work done in this direction by Joseph Dangel, superintendent of the Akron plant of the American Hard Rubber Co. When he first announced that he could turn out a ball which would be better than the *lignum vitae* balls in general use, bowlers were disposed to scoff, claiming that the balls would rebound when they struck the pins, thus making it impossible to do the execution of a *lignum vitae* ball. But being an enthusiastic bowler, as well as a practical rubber man, Mr. Dangel combined the knowledge he had gained in both pursuits in the manufacture of a rubber ball, and the results have justified his fondest hopes. Orders are now being received in good volume. Balls have come through the hard usage of two seasons with hardly a scratch, and apparently are as good to-day as when first turned out. The hard rubber ball does not shrink, and is guaranteed not to crack, and these features are the ones which cause the bowler a lot of trouble. A ball of wood which weighs 19 pounds when purchased will, before the end of the season, lose 4 or 5 pounds.

besides being much smaller than when new, while a rubber ball will retain its size and weight indefinitely. Since the American Bowling Congress have limited the weight of the ball to 16½ pounds, and the size as well, bowlers who use the *lignum vitae* ball have been considerably worried. It is a well known fact that the heavy ball makes large scores possible, and with a wood ball the weight can only be secured by loading the ball with lead, which requires the services of an expert. With the rubber ball any desired weight can be had, and this weight will be retained for years. A number of local bowlers are using the rubber balls, and orders from out of the city are being received. Local bowlers will take a large number of the balls to the national bowling tournament at Cleveland in February.

Mr. Dangel is also a member of the Akron city council, and at a recent meeting of that body, presented to the president of that body a beautiful gavel of hard rubber which he had made for the purpose.

* * *

THE "Diamond challenge cup" for manufacturers, offered by the Diamond Rubber Co., is creating a great deal of interest among automobile racers. It was last won by Mr. F. A. LaRoche at the second annual race meet of the Long Island Automobile Club at Brighton Beach, on October 31. For some time the cup had been in the possession of Tom Cooper, by whom it was won twice. The cup was also won once by Mr. Alexander Winton. It must be won three times before it becomes the property of the winner. The cup is valued at $250.

* * *

THE promoters of the Superior Rubber and Manufacturing Co., at Cuyahoga Falls, have promised that the plant will be placed in operation by the first of the year. For some time workmen have been engaged in placing machinery in place, and it had been expected that the plant would be in operation long before this. Announcement is now made that the plumbing and steam heating apparatus have been installed, and that as soon as all the machinery that is now in place, work will be started.

* * *

THE Federal Rubber Co. is the name of a new company, just organized by Akron men, to manufacture dipped goods on a small scale. It has been capitalized at $15,000, and the incorporators are Frank E. Ream, John F. Halderman, Harry Boyer, W. R. Griswold, and M. F. Boerstler. The incorporators are not ready to tell of their plans further than that they will secure a factory building here which has stood idle for some time, and equip it with rubber machinery. The company has been incorporated under Ohio laws.

* * *

THE Diamond Rubber Co.'s hard rubber department is reported by Mr. J. R. Bailey, its superintendent, as doing all the work that can be taken care of with the present equipment. This branch was started as an experiment, but has become a profitable department of the company's factory.

* * *

THE American Hard Rubber Co. make every year large quantities of supplies for the Edison Storage Battery Co., and a large part of the yearly output is made at the Akron plant of the company. The statement is made that one contract alone calls for rubber goods to the amount of almost $250,000 a year.

* * *

MR. A. H. MARKS, vice president and general manager of the Diamond Rubber Co., has returned from Europe. He was in Liverpool, where he attended the annual meeting of the Northwestern Rubber Co., Limited, of which he was reëlected president. Mr. O. C. Barber, a director of the Diamond Rubber Co., was also reëlected director in the Northwestern company. The latter company has been in operation but a year, but Mr. Marks states that its business is very satisfactory, and is constantly increasing. According to Mr. Marks, an all-absorbing topic in England at present is the fiscal question, and he is of the opinion that Mr. Chamberlain, with his protective tariff scheme, will win.

* * *

CHARLES AMMERMAN, president of the Lilly Rubber Manufacturing Co., of Barberton, has disposed of his stock in the First National Bank, of that place, and has been succeeded by F. Keifer as president of the institution. Mr. Ammerman, who is a prominent member of the Summit County Bar Association, is one of the most prominent business men of Barberton, being connected with a number of the business enterprises which have made that an important manufacturing city.

* * *

SOME time about the first of the year the Faultless and Camp rubber companies will be consolidated under the name of the Faultless Rubber Co. The Faultless plant is located in Akron and the plant of the Camp Rubber Co. at Ashland, Ohio. Both companies being controlled by the same people, it has been decided to combine them so that the management may be more economically conducted. Mr. H. B. Camp, of Akron, is president of both companies, and Mr. T. W. Miller treasurer and general manager of both. Mr. Miller stated to THE INDIA RUBBER WORLD correspondent that it is not the purpose of the company to make any changes in the management of the two plants, but that the business of both concerns will be conducted from one office. The new company will be capitalized at $325,000, and incorporated under the laws of Ohio. The Camp Rubber Co. makes a specialty of manufacturing rubber horse collars, and since its organization the growth of its business has been phenomenal. It is stated that on account of the growth of the business of the company which uses the rubber collars it may be removed from Holland, Michigan, to Ashland, to be near the source of supply. Mr. Miller states that the company is 200,000 behind its orders at the present time.

* * *

THE Firestone Tire and Rubber Co. are understood to have a good trade in Cuba. Mr. S. G. Carkhuff, of this company, lately returned from a stay of several weeks in Cuba, during which he contracted with their resident agent for the delivery in 1904 of a large number of vehicle tires. Many rubber tires are already used in the new republic, and the Firestone company have made a special bid for this trade by supplying a "side wire" solid tire that has a broader tread and is a little heavier than the tires used in the United States. In order to take care of their growing trade, the Firestone company are building an addition to their plant, 60×40 feet, to be used as a warehouse and shipping room, which, when completed, will give them a building 210×75 feet.

SOMEBODY in giving an account of how footballs are made, after going into the details of the preparation of the leather cover, says: "The outer cover is now ready for the bladder. This is made of the best Pará rubber, and involves even more care in its construction than the leather cover itself. It is of immense strength, and is an expensive item, representing nearly half the cost of manufacture. The next operation is the inflation of the ball. This is done in a second by machinery, and then the ball is laced up. However, even yet it is not complete, for it still has to pass through the hands of the shaper, who pats down any inequalities in the seams or contour of the ball."

NEWS OF THE AMERICAN RUBBER TRADE.

THE INDIA RUBBER CO. (NEW BRUNSWICK, N. J.)

THIS new company, incorporated in July last, with $500,000 capital, to succeed to the business of the India Rubber Co. of Akron, Ohio (burned out in March), will begin active operations on January 5, having remodelled the factory of the old New Brunswick Rubber Co. The new plant is one of the completest in its class, and it is the most modern in its equipment. All of the machinery, both for making tires and mechanical rubber goods is new and up to date and constructed with especial view to safety and speed. The plant will start operations with 350 workmen, which number it is expected will be increased before a great while. John Rathers will be the superintendent of the mechanical goods department and Frank Donnell the managar of the same department. The production will include a general line of mechanical goods. The company will be ready to offer a novelty in tires at the automobile shows.

THE PENNSYLVANIA RUBBER CO. WIN.

WHEN the Pennsylvania Rubber Co. began the manufacture of double tube bicycle tires, they were sued by Morgan & Wright for alleged infringement of their patent No. 502,047, of July 25, 1893, covering the method of closing the ends of inner tube tires. In January, 1903, Judge Buffington, in the United States circuit court for the western district of Pennsylvania, at Erie, rendered an adverse decision, holding that the Pennsylvania company had "found a different method of closure, and such mode is not by a flattened end." An appeal was taken by Morgan & Wright, and on December 7 a decision was handed down by the United States circuit court of appeals at Philadelphia, affirming the decision of Judge Buffington. In a number of suits previously brought by Morgan & Wright against various rubber tire manufacturers, decisions were rendered in their favor, but in the latest case the defendants have been successful in presenting a method of manufacture that is held not to infringe the Morgan & Wright patent. As the matter now stands, this firm and the Pennsylvania Rubber Co. seem to control the field in double tube bicycle tires.

CONSOLIDATED RUBBER TIRE CO.

A CIRCULAR has been issued by Russell H. Landale, an attorney, at No. 170 Broadway, New York, to the debenture holders and shareholders of this company, announcing the abandonment of a project for the reorganization of this company proposed in June last. Such reorganization being impracticable without the coöperation of a majority of the bondholders as well as of the shareholders, and the holders of a majority of both classes of securities being unwilling to deposit the same, the plan has been abandoned. The idea was to substitute shares for the debentures, and to scale the amount of both common and preferred stock. Since the issuance of the Landale circular there has been a decided improvement in the market value of the bonds, and the holders feel more encouraged as to the future of the company.

THE G & J TIRE CO.

HAROLD O. SMITH has been elected president of The G & J Tire Co. (Indianapolis, Indiana), having held this office prior to October, 1902, when it was filled by the election of Lewis D. Parker. Mr. Parker lately resigned the position, to devote his attention more closely to the affairs of the Hartford Rubber Works Co., of which he is the president. J. D. Anderson, who has been identified with The G & J Tire Co. for some time, after having been connected with the Hartford company, has been elected vice president, treasurer, and general manager of the company.

BOSTON STANDARD RUBBER CO.

THE above company have purchased the plant at Campello, Massachusetts, operated prior to 1901 by the Standard Rubber Co., and acquired in that year by the New York firm of Cavanaugh Brothers & Knapp, who have since continued the business under the style of the Standard Rubber and Oilcloth Co. The plant is being enlarged and will be devoted to proofing cloth and to the manufacture of rubber specialties.

THE COMING AUTOMOBILE SHOWS.

THE fourth annual automobile show under the auspices of the Automobile Club of America, and the National Association of Automobile Manufacturers, will be held at Madison Square Garden, New York, January 16-23. The interest in the coming show is widespread, the applications for space from manufacturers of automobiles and accessories pointing to a more extensive exhibition than even that of last year. Last year there were 143 exhibitors, of whom 76 showed completed vehicles. Up to date space has been allotted to 155 exhibitors, of whom 89 will show complete automobiles. The rubber tire trade promises to be well represented, the following manufacturers having obtained space at last accounts:

Continental Caoutchouc Co.	New York.
Diamond Rubber Co.	Akron, Ohio.
Firestone Tire and Rubber Co.	Akron, Ohio.
Fisk Rubber Co.	Chicopee Falls, Mass.
G & J Tire Co.	Indianapolis, Indiana.
B. F. Goodrich Co.	Akron, Ohio.
Goodyear Tire and Rubber Co.	Akron, Ohio.
Hartford Rubber Works Co.	Hartford, Connecticut.
Morgan & Wright	Chicago.
Also:	
Stodder Tire Co.	New York.
Whalebone Rubber Co.	New York.

The Chicago automobile show will follow, on February 6–13, when most of the rubber companies named above will be represented.

MALDEN BOOTMAKERS' ASSOCIATION.

THE first annual concert and ball of the Bootmakers' Relief Association of the Boston Rubber Shoe Co., Factory No. 1, at Malden, Mass., was held on the evening of November 25, in the Malden Auditorium Hall. THE INDIA RUBBER WORLD has been favored with a copy of a "Souvenir Book and Program," of the occasion, the same comprising 24 pages, with portraits of the officers of the company, and employés prominent in the organization. This association was formed April 8, 1896, for purposes of mutual benefit. There is now a membership of 116, and during seven years over $1600 has been paid out in relief to sick or disabled members. Charles A. Christianson is president; Michael T. Rooney, vice-president; Lewis E. Bennett, secretary; and Frank M. Hungerford, treasurer. Over 200 couples attended the ball, besides several officials of the company.

ANNIVERSARY OF A ST. LOUIS SHOE HOUSE.

THE Brown Shoe Co. (St. Louis) early in the month celebrated their twenty-fifth anniversary, in connection with which some interesting details of the history of the house were made public. In 1878 the copartnership of Bryan, Brown & Co. was formed, with $12,000 capital, to manufacture shoes in St. Louis

and engage in wholesaling shoes. Their first year's business totaled $110 000. In 1881 the business was incorporated, with $60,000 capital, since which time every year has shown an increase of business. In 1893 the corporate name of the company was changed to The Brown Shoe Co. The full paid capital is now $1,000,000, and it is stated that the shipments this year will exceed $5,000,000 in value. Mr. George Warren Brown, the founder of the business, is still at its head, as president of the corporation. The shoes made by the company are sold not only over the greater part of the United States, but also in several foreign countries. The company have an important rubber department, handling the "Goodyear Glove" and "Jersey" brands, on which their business is one of the best in the West.

AMERICAN TUBING AND WEBBING CO.

THE property of this company and its business, as a going concern, was offered at public sale at Providence, by the receivers, on December 1. The purchaser was Joseph W. Green, Jr., treasurer of the Glendall Elastic Fabrics Co., of Easthampton, Massachusetts, and the total price bid was $151,475. The plant brought $96,000; the stock in the webbing department, $52,900; tubing stock, $2025; braiding stock, $450. There being no bids for certain lots belonging to the company in another part of town, their sale was postponed.——The operation of the plant, under the old name, will be continued by the new owners. The weaving department, employing about 200 men, resumed operations on December 14, and the finishing department, with 100 employés, on December 21. Employés of the old company were given the preference. George Astell, connected formerly with the Easthampton plant, has been appointed superintendent of the plant at Providence.——There have been a number of hearings in the case of Dresser & Co., the New York commission merchants whose failure led to the change in the affairs of the above company, but they have not yet been granted a discharge in bankruptcy.

AMERICAN TUBING AND WEBBING CO.
[Factory at Providence, Rhode Island, which has changed ownership.]

THE CROCKER RUBBER STORES.

ISAAC CROCKER, who for some years past has been president and general manager of the three retail rubber stores—

Hope Rubber Co., Providence, Rhode Island,
Lawrence Rubber Co., Lawrence, Massachusetts,
Lowell Rubber Co., Lowell, Massachusetts—

has recently been elected treasurer of the above companies, in addition to his former position. Mr. Crocker first began his connection with the rubber business in Lowell on November 30, 1881, under the management of Granville Hayward, brother of the late J. Francis Hayward, who was formerly the owner of the three stores mentioned above.

RUBBER SHOE PRICES.

THE United States Rubber Co. issued a circular to their customers, under date of December 16, announcing: "We have thought best to defer for the present the announcement of our prices for the coming season, and shall not be prepared to make known our discounts, terms, etc., until some date after January 1, 1904. As soon as the company determines on the policy for the future, we will advise you of the situation. Until further notice it will be our pleasure to supply your wants, as far as possible, under the terms of the contract now in force. It is a source of gratification to know that the present season has been in volume of business and profit, satisfactory to our customers, and we hope the coming season will exceed the past in this respect."

A NOVELTY IN GARDEN HOSE.

ONE of the novelties of the season is the new garden hose offered by the Boston Woven Hose and Rubber Co, under the brand "Thoroughbred." In construction the hose is strong and serviceable and in appearance it is a work of art. The jacket is woven with black cotton, through which runs a spiral line of red, white, and blue. The couplings are of special pattern, heavy and ornamental, and the smooth attaching band is engraved with the company's name. It is a handsome piece of goods and will make a fine appearance on any well kept lawn.

RECEIVER FOR THE INTERNATIONAL RUBBER MFG. CO.

IN the chancery court of New Jersey, at Jersey City, on December 7, William T. Baird, of South Orange, was appointed receiver for the above company, having a mechanical goods and tire factory in Jersey City and offices at No. 136 Liberty street, New York. The appointment of Mr. Baird was confirmed by Chancellor Stevens on December 21. At a meeting of creditors on December 15, a committee composed of Charles H. Arnold, Henry A. Gould, and Sidney H. March, was appointed to investigate the condition of the company and report on the best plans for protecting the rights of the creditors. At the meeting of creditors $150,000 out of a total of $152,000 indebtedness was represented. The nominal assets are reported at about $93,000. The International company was incorporated in New Jersey in September, 1902, with $100,000 capital reported, and had been in operation for less than a year. Tires were the principal product.——Later Hays & Hershfield, attorneys of New York, filed a petition in bankruptcy against the International company, on behalf of these creditors: Jefferson Bank, $2100; Henry R. Worthington, $870; H. L. Herbert & Co., $80. They are dissatisfied with the insolvency proceedings brought in the New Jersey state court.

WHAT BECOMES OF WORN OUT FIRE HOSE.

THE disposal of worn out equipment by the fire department of the city of New York is managed as systematically as the purchase of new supplies, as witness an advertisement in a late issue of the official *City Record*, wherein 39 lots of engines, hose, and other supplies are advertised for public sale to the highest bidders. There are included 197 lengths of old cotton hose, 82 lengths of old rubber hose, about 2000 pounds of rubber tires and one lot of "scrap rubber."

WESTERN FIRE HOSE FOR NEW YORK.

AN important order for fire department hose for the city of New York has been secured by the Republic Rubber Co. (Youngstown, Ohio). The specifications, in this instance, deviated from the usual practice of the New York fire department, in that, instead of being so worded as to point to particular brands of hose, the bidding was open to all, though a high

standard was required. A contract for the whole amount of rubber fire hose for which bids were opened on November 9 was awarded to the Republic company over seven competitors, and delivery of the hose is to be completed within 60 days of the date named. The hose called for comprised 10,000 feet 1½ inches in diameter, 36,000 feet 2½ inches, and 3000 feet 3 inches in diameter—total, 49,000 feet.

NEW YORK STOCK EXCHANGE TRANSACTIONS.

UNITED States Rubber Co.:

DATES.	COMMON.			PREFERRED.		
	Sales.	High.	Low.	Sales.	High.	Low.
Week ending Nov. 28	250	9	9	400	36⅛	35⅛
Week ending Dec. 5	1,147	10	9	1,160	39¾	35⅞
Week ending Dec. 12	400	10⅜	10	400	40	39
Week ending Dec. 19	500	10	10	500	40	39½
Week ending Dec. 26	455	10½	10⅛	200	39½	39½

RANGE FOR TWO YEARS.

	Common.		Preferred.	
1902	High 19⅝	Low 14	High 64	Low 49½
1903	19⅛	7	58	30¼

RUBBER Goods Manufacturing Co.:

DATES.	COMMON.			PREFERRED.		
	Sales.	High.	Low.	Sales.	High.	Low.
Week ending Nov. 28	200	14⅝	14⅛	365	70	67
Week ending Dec. 5	4,980	16½	14⅛	2,700	73	72
Week ending Dec. 12	11,790	19½	16¾	770	72¾	72
Week ending Dec. 19	4,760	18⅜	16¼	413	72	72
Week ending Dec. 26	1,050	18	17⅛	310	72	71

RANGE FOR TWO YEARS.

	Common.		Preferred.	
1902	High 25⅛	Low 17¼	High 74	Low 63
1903	30	12	84½	60

THE CABLE RUBBER CO. PLANT FOR SALE.

THERE is announced for sale, by the trustees in bankruptcy of the Cable Rubber Co., the entire plant, stock, and other assets of the estate, including the buildings on Brookside avenue, Jamaica Plain, Boston; adequate mechanical equipment, all in good condition and much of it practically new; and a considerable supply of raw materials and some manufactured products. The plant has not been in operation since the assignment of the company July 15, 1903. Further details regarding the sale appear in the advertising columns of this Journal.

THE "EUREKA" TRADEMARK SUIT.

TRIAL of the suit of the Eureka Fire Hose Co. against the Eureka Rubber Manufacturing Co. of Trenton, N. J., to have the latter permanently enjoined from the use of the word "Eureka" as a part of their corporate title and as a trademark for their products, mentioned in THE INDIA RUBBER WORLD of July 1, 1903 (page 350), was begun on December 21 before Vice Chancellor Emery, at Newark, New Jersey. Both companies are incorporated under New Jersey laws. The complainant's bill shows that their use of the word "Eureka" was begun in 1875, when their business was first established, under the laws of New York, and that the incorporation was transferred to New Jersey December 28, 1899. The Eureka Rubber Manufacturing Co. of Trenton, N. J. was incorporated July 15, 1902. The complainants assert that the word "Eureka" had been duly registered by them as a trademark and that, upon the organization of the defendant company, they protested against the use by the latter of the name "Eureka," and called attention to the statutes pertaining to trademarks. The answer of the defendants is a denial that the complainants have valid and exclusive title to the use of the word "Eureka," as claimed, and the controversy before the court will assume the phase of a test suit of trademark laws of great significance to manufacturers. The taking of testimony was continued during the week, after which there was an adjournment to February 10, when the case is to be heard continuously until concluded.

THE COMBINATION RUBBER AND BELTING CO.

[See THE INDIA RUBBER WORLD, November 1, 1903—page 59.]

SCHEDULES in bankruptcy were filed on December 2, showing liabilities of $286,284.52, and assets of $97,231.87. The referee will next call a first meeting of creditors for the election of a trustee, of which due notice will be sent to the parties concerned.

NEW INCORPORATIONS.

THE Dayton Rubber Co. (Dayton, Ohio), December 9, 1903, under Ohio laws, to manufacture rubber goods; capital, $250,000. Incorporators: William S. Huffman, Albert T. Holt, Claude C. Hooven, Harrie N. Reynolds, Nathaniel P. Ramsey, Oscar F. Davieson. Tires and pneumatic air cushions are mentioned as intended specialties of the new company's production.——In July last several of the persons above named filed incorporation papers in New Jersey, for the Dayton Rubber Manufacturing Co., and the Ohio corporation is to take the place of the former project.——Mr. Daviesen has been elected president, Mr. Ramsey vice president, Mr. Huffman secretary, and Mr. Hooven treasurer. The factory management will be in charge of Mr. Holt and the selling department in charge of Mr. Huffman.

=Langill Fountain Pen and Brush Co., December 17, 1903, under New Jersey laws, to manufacture fountain pens; capital, $100,000. Incorporators: John T. Langill and John E. Langill, Brooklyn; Alexander M. Lowry, New York city. Registered office: No. 76 Montgomery street, Jersey City.

=Smith & Longyear Co., December 15, 1903, under New York laws, to deal in waterproof materials; capital, $25,000. Directors: A. F. Smith, P. D. Longyear, and W. H. Smith—all of New York city.

TRADE NEWS NOTES.

THE regular semi-annual dividend of $3 per share on the preferred stock of the Boston Woven Hose and Rubber Co. was payable on December 15, to shareholders of record of December 10.

=The Diamond Rubber Co. have had registered in Chicago a lease of the premises No. 167-169 Lake street, now occupied by them for their business in Chicago, for a term of years, for $24,000. In an interview with an INDIA RUBBER WORLD representative, their manager reports that the year's trade has been very satisfactory. The demand for automobile tires has been exceedingly good, while the bicycle tire business has more than held its own.

=The blowing out of two cylinder heads at the factory of the Goodyear's Metallic Rubber Shoe Co. (Naugatuck, Connecticut) on December 9, caused a suspension of work for two days.

=The Alling Rubber Co. (New Haven, Connecticut) have filed with the secretary of state a certificate of increase of capital stock from $24,000 to $30,000, to cover the business which this corporation is doing in New Haven, Meriden, and Bridgeport.

=In a letter to Morris & Co. (Yardville, New Jersey), in regard to their spring bottom baskets, the New York Rubber Co. wrote recently: "In reply to your inquiry as to what we use duck baskets for, would say that they are generally used for balls and toys. They give us very good satisfaction and we think they are great floor savers. We cheerfully recommend them to all wanting baskets of that kind where they have to be dragged over the floors."

=The two factories of the Woonsocket Rubber Co. were reported recently to be employing about 1850 hands, of whom 1100 were at work in the "Alice" mill, and 750 at Millville The daily ticket was about 12,000 pairs of shoes and 4800 pairs of boots. Both mills were running steadily and the company were advertising for additional help.

=The Beacon Falls Rubber Shoe Co. (Beacon Falls, Conn.). having been mentioned as having under way a reclaiming plant, they advise THE INDIA RUBBER WORLD that what they are putting up is a small building in which to recover unvulcanized scrap. As this is an acid treatment, it was thought best to locate the plant outside of their main buildings.

=The first shipment of rubber shoes from the new factory of Terrence McCarty, at Bristol, Rhode Island, was made to Boston, on December 2.

=The Plymouth Rubber Co. (Stoughton, Massachusetts) recently purchased some real estate near their factory, with a view, it is understood, to building an extension in the near future.

=The Hartford Rubber Works Co. have lately added a 900 HP. Corliss engine to their factory at Hartford,

=The Corona Rubber Co., Limited, of Montreal, the incorporation of which was reported in the November issue of this Journal, have acquired the plant of the late Strathcona Rubber Co., at Nos. 200-208 Papineau avenue, and taken up the business of proofing cloth for the waterproof clothing trade.

=Dana Webster, for some time past assistant superintendent at the factory of the Hartford Rubber Works Co., has accepted a similar position with The India Rubber Co., the new company operating at New Brunswick, New Jersey.

=From present indications the factories of the United States Rubber Co. at Naugatuck will continue busy all winter. These factories have been run at high pressure for the past three years, and this winter the employés have not had even a full week's shutdown for the holidays.

=Not many years ago all fruitjar rings were packed in barrels. The first rings offered in packages were in strawboard tubes which contained a gross of rings. The Boston Woven Hose and Rubber Co. have led in the movement to furnish packages, and their line this year contains five grades that are packed in embossed boxes containing one dozen rings, and three grades that are packed in cartons containing one pound. The cartons are appropriately labelled with handsome lithographs.

=The New York Belting and Packing Co., Limited, have removed their San Francisco branch to Nos. 605-607 Mission street.

=The sixth annual meeting of the Western Association of Shoe Jobbers will be held in St. Louis, on January 5 and 6, on which occasion the rubber shoe trade, as usual, will be liberally represented. The program provides for separate meetings of the jobbers handling each of the leading brands of rubbers, including the Western Association of Hood Rubber Co.'s Jobbers.

=The Fall River (Massachusetts) Rubber Co. was damaged by a fire which started in a neighboring dry goods store on the evening of December 11. The loss has been determined by the insurance adjusters at $1650.

=The production of the Boston Rubber Shoe Co. in one week recently was 25,500 pairs of boots and 259,500 pairs of shoes —total, 285,000 pairs. The number of employés was 3100 and the pay roll $31,000.

=At an auction sale of securities at Philadelphia on December 17, one lot of 700 shares of Pneumatic Horse Collar brought $1.10, and a lot of 100 shares brought 10 cents. The Stock Exchange price in 1899 was $3 per share.

=The plant of the Monarch Rubber Co. (Campello, Massachusetts) is being enlarged, with the view to adding new lines of production.

=The Boston Belting Co.'s regular quarterly dividend No. 137, of $2 per share, was payable on January 1 to holders of record at the close of business on December 15.

=The Franklin Rubber Co. (Boston) have obtained permission from the aldermen of Malden to erect an addition to their factory on Eastern avenue, in that city.

=The Apsley Rubber Co. (Hudson, Massachusetts) were reported lately to be working a larger shoe ticket than at any previous date.

=In May last an effort was made by the United States postal authorities to convict one James B. Kellogg of using the mails with fraudulent intent, in connection with the so called International Wheel, Tire, and Rubber Co. This charge was not sustained, but other charges of fraud already pending against Kellogg were proved against him, and on December 9 he entered the New York state prison at Sing Sing, to serve a term of imprisonment of 18 months.

=Mr. George B. Spencer has resigned as manager of the sundries department of The Goodyear Tire and Rubber Co. (Akron, Ohio), to date from January 1, to devote his attention to his interests in rubber in another direction.

=The Eureka Rubber Manufacturing Co., of Trenton, New Jersey, while not having given special attention to the fire hose trade, has received some orders of late, including one for 2000 feet for the city of Yonkers, New York.

=The Faultless Rubber Co., of Akron and Ashland, Ohio, was incorporated at Columbus, Ohio, on December 24, with $225,000 capital, by T. W. Miller, H. W. Camp, Roy Miller, T. M. Gregory, and H. E. Andress. The nature of the business of the new corporation will be found set forth in detail in the Akron correspondence on another page of this paper.

=The first calendar for 1904 that reaches us arrives with the compliments of the Consolidated Rubber Tire Co. (New York and Akron, Ohio), manufacturers of the Kelly-Springfield tire. This calendar comprises six leaves of heavy paper, 10 × 12½ inches, each designed for two months, and each containing an attractive picture in colors.

=The Stamford (Connecticut) Rubber Supply Co. send us an attractive calendar for 1904 which, suspended over the rubber man's desk, will serve as a pleasant reminder throughout the year of the business of this company in rubber substitutes.

=Messrs. John Royle & Sons (Paterson, New Jersey) are sending to their friends this year, as usual, a handsome pocket memorandum book, with spaces for every day in the year, a calendar, and data useful for reference, not forgetting a mention of the machinery which they produce, for the use of the rubber and other industries.

=The regular quarterly dividend of 1¾ per cent. on American Chicle Co. preferred is payable on January 2, and the regular monthly dividend of 1 per cent. on the ordinary shares on January 20.

=Mr. Fred A. Plum has joined the selling forces of the Voorhees Rubber Manufacturing Co., dating from January 1, and will look after his friends in the trade in the states of New York and Pennsylvania. Mr. Plum, in a former connection, was for more than twenty-five years closely associated with Mr. Voorhees, and it seems natural that they should again be allied in business. The Voorhees Rubber Manufacturing Co. have been very successful ever since their beginning in business in 1898, having now one of the best equipped factories in the country, and the addition of Mr. Plum to their forces is another evidence of their good business judgment.

PERSONAL MENTION.

THE many friends in the rubber trade of Dr. H. C. Corson, formerly vice president of The B. F. Goodrich Co., will learn with regret that news has reached Akron that he is in Paris undergoing treatment for a serious affection of his eyes.

=Mr. George M. Allerton, of the Seamless Rubber Co., had a narrow escape from serious injury at the railroad depot at Naugatuck, Conn., on the evening of December 18. He attempted to alight while the train was still in motion, and lost his footing but not his hold upon the car rail, and was dragged along the platform for a considerable distance.

=Mr. Andrew H. Brown, of the New York offices of the United States Rubber Co., and Miss Bertha Robinson Shute, of Malden, Massachusetts, were married in the latter city on December 22.

=Dr. Carl Otto Weber, of Manchester, England, who is now in the United States for a prolonged stay in the promotion of his professional work, recently delivered by invitation, before the American Chemical Society, an address on "The Application of Scientific Data to India-Rubber Manufacturing."

=One of the features of the thirty-sixth annual reunion of the Fifty-first Massachusetts regiment of Volunteers in the civil war, at Worcester, Massachusetts, on December 22, was the reading by General A. B. R. Sprague, the old commander of the regiment, of a tribute to Lieutenant Colonel John M. Studley who served with that regiment. Colonel Studley died on April 10, 1903, at Providence, Rhode Island, where he has been engaged for a number of years in the rubber business, his obituary appearing in THE INDIA RUBBER WORLD of May 1, 1903 (page 273). At the same meeting a life sized portrait of General Sprague was presented to the Worcester Mechanics' Association, to hang with those of other celebrities in Mechanics' Hall. One of the notable figures at the banquet was Governor Lucius C. F. Garvin, of Rhode Island, who enlisted with the regiment at the beginning and remained in its ranks until it was disbanded. The name of Colonel Studley, during the proceedings, was constantly coupled with that of General Sprague, and again and again was singled out for the warmest appreciation by the different speakers.

THE SITUATION ON THE ACRE.

THE treaty between Brazil and Bolivia respecting the Acre territory, the details of which have been reported in previous issues of THE INDIA RUBBER WORLD, was signed at Rio de Janeiro on November 21 by the representatives of the two powers. The Bolivian commissioner at once set out for his capital, La Paz, expecting to reach there by December 15, when the treaty would at once and simultaneously be placed before the Brazilian and Bolivian congresses for ratification. A latter seport says the treaty has been ratified.

The Pará newspaper, *A Folha do Norte*, says that the occupation of Acre since the beginning of the disturbance has cost Brazil 9,000,000 *milreis* [=$2,189,925], of which more than 1,500,000 *milreis* has been paid to the Amazon Steam Navigation Co. for transportation of troops and supplies.

THE Republic Development Co., contractors for the plantation "San Silverio el Obispo," (Obispo Rubber Plantation Co.) announce the earnings from that property for the year 1903 as 8 per cent., payable January 2, 1904, to share-contract holders of record December 15, 1903.

REVIEW OF THE CRUDE RUBBER MARKET.

THE market has been without notable change since our last report. Toward the end of the year, which is the usual season for stock taking by rubber manufacturers, and of repairs at the works, there is seldom any pressure to buy, and the rule holds good at the present time. The market has preserved a distinct firmness, however, in the face of somewhat larger receipts at Pará than last year, and larger than in any preceding year, with one exception. There have been larger receipts likewise at Antwerp—now the largest single market for African sorts—but while visible supplies of rubber are now larger than for some time past, the increase in stocks has not been commensurate with the larger arrivals.

Consumption has continued active throughout the year, and all indications point to continued activity, at least for some months to come. The consumption of rubber in the United States has been phenomenal, in which connection may be introduced the official import returns of imports of raw material for the first eleven months of three years past, as follows:

	Pounds.	Value.
January-November, 1901	50,096,203	$25,729,334
January-November, 1902	46,007,428	22,568,786
January-November, 1903	50,868,845	31,960,432

Here it will be seen that not only have the imports for eleven months of 1903 been larger than in any preceding year, but the money value of the imports has been more than $6,000,000 greater than for the same period of 1901. Our imports, by the way, are mainly for home consumption with the exception of the amounts delivered to Canadian manufacturers.

The following table shows the arrivals of rubber at Pará from the beginning of the current crop season to the end of each month thus far, compared with the corresponding periods of three years past. Only in one preceding year—1901—have the arrivals been greater at the end of December. The figures follow:

	1900.	1901.	1902.	1903.
To July 31.....*tons*	860	1,260	1,290	1,280
" August 31.....	2,150	2,550	2,660	2,510
" September 30.....	3,430	4,490	4,330	4,520
" October 31.....	5,780	7,130	6,610	6,960
" November 30.....	7,980	10,100	9,260	9,940
" December 31.....	11,300	13,630	12,250	a13,290

[a—To December 29, 1903.]

Following is a statement of prices of Pará grades, one year ago, one month ago, and on December 30—the current date:

PARA.	Jan 1. '03.	Dec. 1, '03.	Dec. 30.
Islands, fine, new.....	88@89	92@ 93	90@ 91
Islands, fine, old.....	91@92	@	@
Upriver, fine, new.....	90@91	95@ 96	93@ 94
Upriver, fine, old.....	95@96	97@ 98	96@ 97
Islands, coarse, new.....	60@61	55@ 56	55@ 56
Islands, coarse, old.....	@	@	@
Upriver, coarse, new.....	73@74	79@ 80	76@ 77
Upriver, coarse, old.....	@	@	@
Caucho (Peruvian) sheet.....	59@60	60@ 61	61@ 62
Caucho (Peruvian) ball.....	69@70	71@ 72	72@ 73

The market for other sorts in New York on which changes have been rather less marked, is as follows:

AFRICAN.			
Sierra Leone, 1st quality	84 @85	Gaboon lump.....	None here
Massai, red.....	84 @85	Niger paste.....	None here
Benguella.....	68 @69	Accra flake.....	34 @35
Cameroon ball.....	62 @63	Accra buttons.....	None here
Gaboon flake.....	None here	Accra strips.....	None here
		Lopori ball, prime....	82 @83
		Lopori strip, do	75 @76

Ikelemba..... ...	82 @83	Panama, slab.....52	@53
Madagascar, pinky....78	@79	Mexican, scrap 68	@69
CENTRALS.		Mexican, slab 50	@51
Esmeralda, sausage...69	@70	Mangabeira, sheet....55	@56
Guayaquil, strip.....58	@59	EAST INDIAN.	
Nicaragua, scrap ... .68	@69	Assam.....78	@79
		Borneo	@

Late Pará cables quote:

	Per Kilo.		Per Kilo.
Islands, fine.	5$600	Upriver, fine.....	6$525
Islands, coarse	2$600	Upriver, coarse.....	4$025

Exchange, 11 1/16 *d.*

Last Manáos advices (December 28):

Upriver, fine.....6$450/4$300		Upriver, coarse.	4$350

Exchange, 11 1/16 *d.*

NEW YORK RUBBER PRICES FOR NOVEMBER (NEW RUBBER).

	1903.	1902.	1901.
Upriver, fine.....	92@1.02	78@82	84@87
Upriver, coarse..	78@ 83	63@68	63@66
Islands, fine.....	90@ 98	73@76	76@80
Islands, coarse	54@ 58	48@51	46@50
Cametá, coarse.....	53@ 58	48@52	48@51

Statistics of Para Rubber (Excluding Caucho).

NEW YORK.

	Fine and Medium.	Coarse.	Total 1903.	Total 1902.	Total 1901.
Stocks, October 31....*tons*	75	7 =	82	170	345
Arrivals, November.....	782	384 =	1166	1463	1405
Aggregating.....	857	391 =	1248	1633	1750
Deliveries, November.....	825	391 =	1216	1462	1215
Stocks, November 30..	32	0 =	32	171	535

	PARÁ.			ENGLAND.		
	1903.	1902.	1901.	1903.	1902.	1901.
Stocks, Oct. 31....*tons*	345	145	375	435	1250	880
Arrivals, November...	2890	2650	2645	1035	1000	1055
Aggregating.....	3235	2795	3020	1470	2250	1935
Deliveries, November.	3040	2640	2610	1100	1050	1050
Stocks, Nov. 30..	195	155	410	370	1200	885

	1903.	1902.	1901.
World's visible supply, November 30....*tons*	2648	3082	3080
Pará receipts, July 1 to November 30.....	9290	8734	9327
Pára receipts of Caucho, same dates.....	594	556	763
Afloat from Pará to United States, Nov. 30..	1017	710	325
Afloat from Pará to Europe, November 30...	1034	846	925

In regard to the financial situation, Albert B. Beers, (broker in India-rubber, No. 58 William street, New York) advises us as follows:

"During December the money market has ruled firm, with some easing at the end of the month. The demand for paper has been light, with 6@7 per cent. the ruling rate."

Liverpool.

WILLIAM WRIGHT & Co. report [December 1]:

Fine Para.—Prices have, generally, declined throughout the month. Fluctuations have been of an exceptionally puzzling character, prices dropping as much as 1*d.* per pound during a day, for no apparent reason; consequently the market has been nervous, buyers not knowing how to act. On the whole, the demand has been good, and with little or no reserve of stock, either here or in America. The tendency at the close is towards an improvement in prices, which is not to be wondered at, when we take into account small stocks, moderate supplies, a good demand, and a drop of fully 10*d.* per pound.

London.

EDWARD TILL & Co. [December 1] report stocks:

		1903.	1902.	1901.
LONDON	Pará sorts..... ....*tons*	—	—	—
	Borneo,.....	20	93	142
	Assam and Rangoon...	4	2	70
	Other sorts....	250	230	457
	Total.....	274	325	669
LIVERPOOL	Pará.....	374	1178	890
	Other sorts....	537	580	966
	Total, United Kingdom.....	1185	2083	2525
	Total, November 1..	866	2464	2802
	Total, September 1.....	1364	2731	2736
	Total, August 1.....	1781	3053	2944
	Total, July 1.....	2285	3595	3128
	Total, June 1.....	2248	3687	3502

PRICES PAID DURING NOVEMBER.

	1903.	1902.	1901.
Pará fine, hard..	3/10 @4/2	3/4½@3/ 6	3/ 5¾@3/7½
Do soft.....	.3/ 9 @4/-	3/0¾@3/ 1½	3/ 3¾@3/5½
Negroheads, Islands. ..	2/ 3½@2/5	2/1½@2/ 2	1/11 @2/1
Do scrappy....	.3/ 3 @3/4¾	2/8½@2/10	2/8
Bolivian	4/- @4/2	3/4¾@3/ 6	3/6½@3/7¼

DECEMBER 11.—Renewed depression has prevailed, and prices of fine Pará have declined fully 2*d.* since the auctions a fortnight ago, but to-day more steadiness has prevailed, with a slight recovery. Sales of hard cure fine Pará forward down to 3*s.* 10½*d.*; soft cure ditto nominal at 3*s.* 10¼*d.*; Negroheads scrappy, small sales, at 3*s.* 4*d.*; Peruvian fine 3*s.* 10½*d.*; ball good quality 3*s.* 4½*d.*; slab 2*s.* 7¼*d.* A fair quantity offered in auction to-day; Africans and Central American steady to rather cheaper. Madagascar mixed niggers and brown biscuit, part dirty, 2*s.*; Mozambique fair red ball, 3*s.* 6*d.*; Lanu ball. 3*s.* 1*d.* Molendo: 28 packages sold without reserve for account of underwriters, fine 3*s.* 10*d.*; entrefine part coarse, 3*s.* 5½*d.*; Negrohead mixed dirty 2*s.* 11½*d.*

Ceylon.—Thirty-four packages sold; fine thin biscuits 4*s.* 6¼*d.*; ditto dark 4*s.* 4½*d.*; mixed to good clean scrap 3*s.* 2¼*d.*@3*s.*⅛ 5*d.*, dirty dark scrap, 1*s.* 7*d.*

Antwerp.

TO THE EDITOR OF THE INDIA RUBBER WORLD: At the sale of November 18, of 501 tons exposed 495 tons were sold. Prices were very irregular, and below valuation, as had been anticipated, on account of the decline in Pará sorts. The high grades—in dry condition—were only 5@6 per cent. below valuations, whereas many of the Upper Congo grades—partly very sticky—sold at a decline 10@12 per cent. Between the October and the November sales fine Pará had declined 13 per cent.

The last large sale of the year took place on December 16 when 671 tons out of 675 offered found buyers, showing that there were very urgent wants to be covered. In consideration of the weakness of the Pará market, influenced by heavy receipts at Pará, this sale also showed some weakness, prices averaging about 1½ per cent. below valuations based upon the results of the November sale. The fine Kasai sorts maintained their former value, whereas Upper Congo sorts, of which some were partly sticky, sold at 2@3 per cent. below the November sale. Among the more important lots sold were the following, with the valuations and price obtained:

		Valuation.	Sold at.
70 tons	Lopori I	9.30	9.10@9.40
22 "	Lopori I.....	9.35	9.07½
33 "	Lopori II.....	7.15	7. @7.27½
32 "	Aruwimi	8.60	8.40@8.60
23 "	Uelé strips.....	8.25	8.30@8 45
24 "	Lake Leopold.....	9.25	9. @9.12½

[10 francs per Kilo=87½ cents per Pound.]

Rubber Scrap Prices.

NEW YORK quotations—prices paid by consumers for carload lots—in cents per pound; again no change of importance to be noted:

Old Rubber Boots and Shoes—Domestic.....	6⅞ @ 7
Do —Foreign.....	6¼ @ 6⅜
Pneumatic Bicycle Tires.....	4 @ 4⅛
Solid Rubber Wagon and Carriage Tires.....	7
White Trimmed Rubber...	8¾ @ 9
Heavy Black Rubber.....	4¼
Air Brake Hose.....	2½ @ 2¾
Fire and Large Hose	2
Garden Hose.....	1½
Matting.....	1

Our stocks amount to 310 tons. Our next sale will take place toward the end of January and amount to 670 tons.

C. SCHMID & CO.

Antwerp, December 16, 1903.

[THE buying on American account was very much smaller than usual. The result of the December inscription brings the total sales at Antwerp for 1903 higher than in any preceding year. The receipts at Antwerp during the year have been only slightly smaller than in 1901—the year of the largest receipts in the past—and stocks are unusually small. It would appear that receipts from the Congo are again increasing in size.]

ANTWERP RUBBER STATISTICS FOR OCTOBER.

DETAILS.	1903.	1902.	1901.	1900.	1899.
Stocks, Sept. 30. *kilos*	421,858	456,711	896,143	1,004,762	307,482
Arrivals, October...	944,274	340,598	234,635	470,028	304,946
Congo sorts.....	863,240	306,228	191,178	431,917	166,821
Other sorts.....	81,034	34,370	43,457	38,111	138,125
Aggregating...	1,366,132	797,309	1,130,778	1,474,790	612,428
Sales, October	489,495	447,171	864,673	565,743	463,690
Stocks, Oct. 31...	876,627	350,138	266,105	909,047	148,738
Arrivals since Jan. 1	4,726,430	4,369,518	4,960,761	5,054,496	2,933,333
Congo sorts	4,277,003	4,031,632	4,574,034	4,298,062	2,491,590
Other sorts	449,427	337,886	386,727	756,434	441,743
Sales since Jan. 1 ..	4,507,898	4,434,089	5,308,605	4,437,440	3,047,935

ANTWERP RUBBER STATISTICS FOR NOVEMBER.

DETAILS.	1903.	1902.	1901.	1900.	1899.
Stocks, Oct. 31. *kilos*	876,637	350,138	266,105	909,047	148,738
Arrivals, November.	361,895	235,231	683,521	473,404	150,196
Congo sorts	303,453	201,172	660,897	452,215	120,127
Other sorts	58,442	34,059	22,624	21,189	30,069
Aggregating....	1,238,532	585,369	949,626	1,382,451	298,934
Sales in November..	558,390	399,408	106,325	317,805	119,156
Stocks, Nov. 30..	680,142	185,961	843,301	1,064,646	179,778
Arrivals since Jan 1.	5,088,325	4,604,749	5,644,282	5,527,900	3,083,529
Congo sorts	4,580,456	4,232,804	5,234,931	4,750,277	2,611,717
Other sorts.	507,869	371,945	409,351	777,623	471,812
Sales since Jan. 1...	5,066,288	4,833,497	5,414,930	4,755,245	3,167,091

RUBBER ARRIVALS AT ANTWERP.

DECEMBER 9.—By the *Philippeville*, from the Congo:

Comptoir Commercial Congolais.....	*kilos*	54,000	
Bunge & Co..... (Chemins de fer des Grand Lacs)		11,000	
Do .....(Société Isangi)		3,500	
Do .....(Société Anversoise)		22,500	
Do .....(Société Générale Africaine)		70,600	
Société Coloniale Anversoise. (Belge du Haut Congo)		1,800	
Do .....(Cie. du Kasai)		102,000	
Do .....(Cie. du Kasai)		9,600	
Do .....(Sud Kamerun)		6,700	
Do .....(Cie. de Lomami)		10,000	
Do		1,000	
M. S. Cols..... .....(Baniembe)		800	
Do ..... (Alima)		2,000	
Charles Dethier..... (La M'Poko)		3,000	
Comptoir des Produits Coloniaux.....		1,500	
W. Mallinckrodt & Co. (Caoutchoucs et Produits de ... .La Lobay)		2,800	282,800

Ceylon Rubber Exports.

OFFICIAL statement of shipments of cultivated rubber, from January 1 to November 30, 1903:

To Great Britain	*pounds*	36,687
To Belgium		156
To Germany.....		1,672
To United States.....		400
Total.....		38,915
Total, 12 months, 1902.....		21,168
Total, 12 months, 1901.		7,392

Rubber Receipts at Manaos.

DURING November and the first five months of the crop season for three years [courtesy of Messrs. Witt & Co.]:

FROM—	NOVEMBER. 1903.	1902.	1901.	JULY-NOVEMBER. 1903.	1902.	1901.
Rio Purús..... .....*tons*	512	249	497	1613	1448	1871
Rio Madeira.....	199	240	267	1208	1134	1331
Rio Juruá.....	468	183	604	882	452	1185
Rio Javary—Iquitos...	304	246	120	1070	554	595
Rio Solimões.....	123	153	268	306	598	772
Rio Negro.....	32	21	12	49	90	29
Total....	1638	1092	1768	5128	4276	5783
Caucho.....	44	94	302	472	415	816
Total.....	1682	1186	2070	5600	4691	6599

Bordeaux.

R. HENRY favors THE INDIA RUBBER WORLD with details of arrivals of rubber for 1903 which permit the record to be brought down to December 1, as follows [weights in kilograms]:

Soudan twists..... Soudan niggers..... Conakry niggers.....	740,000	Madagascar.....	2,560
Cassamance or Gambia	54,140	Java.....	1,500
Bassam (Gold Coast)..	34,370	Mexican.....	2,010
Lahou.....	21,916	Other sorts.....	600
Congo sorts.....	55,000	Total	912,096

Total arrivals for the twelve months of 1902 were 678,400 kilos and in the preceding year only 235,380 kilos.

PRICES DECEMBER 7, IN FRANCS PER KILO.

Conakry niggers, red..	7.50@9.75	Mayumbe.....	5.80@6.10
Soudan niggers, white.	8.50@8.85	Lahou twists.....	8.40@8.65
Soudan twists.....	8.25@8.65	Bassam niggers.....	7 85@8.95
Cassamance A.....	7.10@7.35	Madagascar:	
Cassamance A. M....	6.45@6.60	Majunga...	6. @8.
Bassam lumps.....	4.95@5.55	Tamatave	8.50@9.
Bassam cakes.....	6.90@7.40	Niggers	4. @5 25

Gutta-Percha.

WEISS & Co. (Rotterdam) report exports from Singapore for the first ten months of five years past as follows:

	1899.	1900.	1901.	1902.	1903.
Tons..... ...	5988	5314	4810	3576	2834

IMPORTS FROM PARA AT NEW YORK.

[The Figures Indicate Weights in Pounds.]

December 4.—By the steamer *Amazonense*, from Manáos and Pará:

IMPORTERS.	Fine.	Medium.	Coarse.	Caucho.	Total.
A. T. Morse & Co.... ..	302,200	67,500	103,800	1,000=	474,500
New York Commercial Co.	133,100	33,900	105,900	.....=	272,900
United States Rubber Co.	174,400	27,400	51,700	1,200=	254,700
Poel & Arnold.....	53,200	21,000	38,400	2,200=	114,800
William Wright & Co....	22,200	700	21,500	.....=	44,400
Lionel Hagenaers & Co..	9,700	.....	1,000	.....=	10,700
Robinson & Tallman....	6,700	1,400	1,000	.. ..=	9,100
Hagemeyer & Brunn	5,700	2,400	900	.... =	9,000
Herbst Brothers.....	3,200	1,100	1,600	.....=	6,200
Thomsen & Co.....	3,800	.... .	300	.... =	4,100
Total.....	714,200	155,400	326,400	4,400=	1,200,400

December 14.—By the steamer *Hilary*, from Manáos and Pará:

Poel & Arnold...	145,300	30,000	82,700	6,000=	264,000
United States Rubber Co.	146,200	30,300	80,200	.....=	256,700
A. T. Morse & Co.....	119,700	17,900	112,500	1 400=	251,500
New York Commercial Co.	43,300	16,200	28,600	1,900=	90,000
William Wright & Co....	300	.....	28,200	.....=	28,500
Lionel Hagenaers & Co..	8,800	.....	800	.....=	9,600
Thomsen & Co..... ..	7,800	200	1,100	....=	9,100
Hagemeyer & Brunn....	5,700	2,400	900	.....=	9,000
Robinson & Tallman. ..	5,600	1,400	1,200	...,=	8,200
Total	482,700	98,400	336,200	9,300=	926,600

December 24.—By the steamer *Fluminense*, from Manáos and Pará:

A. T. Morse & Co.....	287,800	66,000	95,300	1,500=	450,600

New York Commercial Co.	175,000	39,800	129,300	300=	344,400
Poel & Arnold	164,000	51,600	92,700	100=	308,400
United States Rubber Co.	16,000	3,000	43,800	....=	62,800
William Wright & Co.	.....	.....	22,700	....=	22,700
Thomsen & Co.	15,400	600	2,200	....=	18,200
Lionel Hagenaers & Co.	9,300	.....	1,100	....=	10,400
Total	667,500	161,000	387,100	1,900=	1,217,500

[NOTE.—The steamer *Benedict*, due at New York on January 2, has on board 425 tons of Rubber and 25 tons of Caucho.]

PARA RUBBER VIA EUROPE.

POUNDS.

DEC. 22.—By the *Zeeland*=Antwerp:
A. T. Morse & Co. (Fine) ... 28,000

OTHER ARRIVALS AT NEW YORK

CENTRALS.

POUNDS.

NOV. 23.—By the *Proteus*=New Orleans:

Manhattan R. Mfg. Co.	6,500	
A. T. Morse & Co	6,000	
A. N. Rotholz	3,000	
Eggers & Heinlein	1,500	17,000

NOV. 24.—By the *Seguranca*=Colon:

Hirzel, Feltman & Co.	39,000	
Lawrence Johnson & Co.	9,300	
G. Amsinck & Co.	5,000	
American Trading Co	4,800	
A. Santos & Co.	4,400	
Mecke & Co	2,800	
Roldan & Van Sickle	2,600	
Isaac Brandon & Bros.	0,400	
Aldanque Bros. & Co	2,000	
L. N. Chemedlin & Co.	2,000	
Smithers, Nordenholt & Co.	1,500	
E. B. Strout	1,200	
Dumarest & Co.	1,400	
A. D. Straus & Co.	600	78,800

NOV. 27.—By the *Adirondack*=Savanilla, etc.:

G. Amsinck & Co.	1,100	
Roldan & Van Sickle	500	
D. A. De Lima & Co.	300	
Mecke & Co	600	2,500

NOV. 27.—By *El Valle*=New Orleans:

A. T. Morse & Co	1,500	
For Europe	4,500	6,000

NOV. 30.—By the *Vigilancia*=Mexico:

E. Steiger & Co.	1,200	
Thebaud Brothers	700	
Harburger & Stack	800	
E. N. Tibbals & Co.	800	
H. Marquardt & Co.	300	
For Hamburg	5,000	3,500

NOV. 30.—By the *Sailor Prince*=Bahia:

Hirsch & Kaiser		7,800

DEC. 1.—By the *Allianca*=Colon:

G. Amsinck & Co.	19,000	
Hirzel, Feltman & Co.	10,800	
Meyer Hecht	4,300	
E. B. Strout	2,200	
L. N. Chemedlin & Co.	2,300	
Livingstone & Co	1,700	
Piza Nephews & Co	1,700	
Smithers, Nordenholt & Co	1,000	
Eggers & Heinlein	800	
Charles E. Grimm	700	
Lawrence Johnson & Co.	700	
H. Marquardt & Co.	500	
For Antwerp	5,800	51,200

DEC. 1.—By the *Valencia*=Cartagena:

Isaac Brandon & Bros.	4,500	
Isaac Kubie & Co	1,500	
E. B. Strout	1,000	
Lawrence Johnson & Co.	500	
Silva, Bussenius & Co.	500	8,000

DEC. 4.—By the *Tintoretto*=Bahia:

J. H. Rossbach & Bros.	11,000	
Hirsch & Kaiser	12,000	23,000

DEC. 5.—By *El Rio*=New Orleans:

A. T. Morse & Co.	7,500	
Manhattan Rubber Mfg. Co.	2,500	10,000

DEC. 6.—By the *Yucatan*=Colon:

Hirzel, Feltman & Co	26,500	
G. Amsinck & Co.	15,400	
American Trading Co	8,500	
A. Santos & Co.	6,200	
Mecke & Co	4,500	
A. M. Capen Sons	5,000	
Roldan & Van Sickle	3,700	
W. Loaiza & Co.	3,000	
Dumarest & Co.	2,800	
L. Johnson & Co	700	
Smithers, Nordenholt & Co	600	
Isaac Kubie & Co	500	
Frederick Probst & Co.	500	
Harburger & Stack	300	
Lanman & Kemp	700	

CENTRALS—Continued.

J. H. Recknagel & Co	500	
Kunhardt & Co.	300	
Antwerp, etc.	2,000	81,700

DEC. 9.—By the *Carib II.*=Honduras:

Eggers & Heinlein	8,500	
H. W. Peabody & Co	900	
A. S. Lascellas & Co.	600	10,000

DEC. 10.—By the *Waldersee*=Hamburg:

Eggers & Heinlein		6,700

DEC. 12.—By the *El Siglo*=New Orleans:

Manhattan Rubber Mfg. Co.	12,500	
A. N. Rotholz	3,000	
Eggers & Heinlein	3,000	
A. S. Lascellas & Co.	500	
T. N. Morgan	500	19,500

DEC. 14.—By the *Horace*=Bahia:

J. H. Rossbach & Bros	13,500	
Hirsch & Kaiser	15,000	28,500

DEC. 15.—By the *City of Washington*=Colon:

Meyer Hecht	3,900	
Hirzel, Feltman & Co.	2,000	
Isaac Brandon & Bros.	1,300	
Samuels & Cummings	1,200	
Frederick Probst & Co.	1,000	
Harburger & Stack	1,000	
Piza, Nephews & Co	700	
E. Steiger & Co	200	
For Brussells, etc.	8,000	19,300

DEC. 15.—By the *Umbria*=Liverpool:

George A. Alden & Co.	13,000	
Poel & Arnold	3,700	16,700

DEC. 15.—By *Alleghany*=Greytown, etc:

Isaac Brandon & Bros.	2,000	
Isaac Kubie & Co.	1,000	
D. A. De Lima & Co.	1,000	
A. D. Straus & Co.	1,000	
E. B. Strout	2,000	
Andreas & Co.	2,000	
Livingstone & Co.	500	
Silva Bussenius Co.	500	
A. S. Lascellas	300	9,300

DEC. 21.—By the *Proteus*=New Orleans:

A. T. Morse & Co	2,500	
Manhattan Rubber Mfg. Co.	1,000	3,500

DEC. 22.—By the *Seguranca*=Colon:

Hirzel, Feltman & Co.	32,500	
G. Amsinck & Co.	10,500	
Lawrence Johnson & Co.	5,800	
Meyer Hecht	4,100	
A. Santos & Co.	3,600	
E. B. Strout	3,800	
Livingstone & Co.	3,500	
Dumarest & Co	2,300	
Isaac Brandon & Bros.	1,800	
Lanman & Kemp	1,900	
Roldan & Van Sickle	1,400	
Jimenez & Escobar	1,300	
L. N. Chemedlin & Co.	2,000	
R. G. Barthold	1,200	
Smithers, Nordenholt & Co.	1,000	
Graham, Hinkley & Co.	1,000	
E. N. Tibbals & Co.	700	
Isaac Kubie & Co.	900	
Everett Heaney & Co.	700	
Kunhardt & Co	200	
Eggers & Heinlein	300	80,500

AFRICANS.

POUNDS.

NOV. 23.—By the *Zeeland*=Antwerp:

A. T. Morse & Co.	25,000	
Joseph Cantor	3,000	28,000

NOV. 27.—By the *Pretoria*=Hamburg:

Robinson & Tallman	13,500	
Joseph Cantor	12,000	
A. T. Morse & Co.	5,000	
Poel & Arnold	3,500	34,000

NOV. 28.—By the *Philadelphia*=London:

United States Rubber Co		43,000

NOV. 30.—By the *Etruria*=Liverpool:

Poel & Arnold	33,000	
A. T. Morse & Co.	11,000	
Earle Brothers	11,000	
William Wright & Co.	8,000	
Rubber Trading Co.	3,000	66,000

AFRICANS—Continued.

DEC. 1.—By the *Finland*=Antwerp:

A. T. Morse & Co.	110,000	
Poel & Arnold	67,000	177,000

DEC. 4.—By the *Moltke*=Hamburg:

A. T. Morse & Co.	22,000	
Joseph Cantor	7,500	29,500

DEC. 5.—By the *St. Louis*=London:

Henry A. Gould Co.	8,000	
Poel & Arnold	6,500	14,500

DEC. 5.—By the *Campania*=Liverpool:

United States Rubber Co.	22,500	
Gorge A. Alden & Co.	11,500	
Rubber Trading Co.	4,000	38,000

DEC. 7.—By the *Vaderland*=Antwerp:

George A. Alden & Co.	187,000	
Joseph Cantor	26,000	
William Wright & Co.	7,000	
For Boston, etc.	180,000	400,000

DEC. 9.—By the *Dona Maria*=Lisbon:

United States Rubber Co.		100,000

DEC. 10.—By the *Oceanic*=Liverpool:

George A. Alden & Co.	15,000	
A. T. Morse & Co	4,000	
William Wright & Co.	3,000	22,000

DEC. 10.—By the *Graf Waldersee*=Hamburg:

A. T. Morse & Co.	24,000	
Poel & Arnold	4,500	28,500

DEC. 17.—By the *Teutonic*=Liverpool:

A. T. Morse & Co.	13,000	
Poel & Arnold	16,000	
Rubber Trading Co.	11,00	40,000

DEC. 19.—By the *Lucania*=Liverpool:

A. T. Morse & Co.	27,000	
Earle Brothers	11,000	
George A. Alden & Co.	8,000	
Rubber Trading Co.	4,500	50,500

DEC. 22.—By the *Zeeland*=Antwerp:

George A. Alden & Co.	48,000	
Joseph Cantor	22,000	70,000

DEC. 23.—By the *Belgravia*=Hamburg:

Robinson & Tallman	7,500	
Joseph Cantor	6,500	
A. T. Morse & Co	47,500	
Rubber Trading Co.	13,500	75,000

EAST INDIAN.

POUNDS.

NOV. 30.—By the *Mexiba*=London:

Robinson & Tallman		12,000

DEC. 21.—By the *St. Paul*=London:

Poel & Arnold		11,000

DEC. 22.—By the *Shimosa*=Singapore:

William Wright & Co.	45,000	
Poel & Arnold	23,000	
Rubber Trading Co.	15,000	
Robert Branss & Co.	10,000	
E. Oppenheim	20,000	113,000

PONTIANAK.

DEC. 22.—By the *Shimosa*=Singapore:

William Wright & Co.	560,000	
Robinson & Tallman	110,000	
Robert Branss & Co.	60,000	730,000

GUTTA-PERCHA AND BALATA.

POUNDS.

DEC. 5.—By the *St Louis*=London:

Earle Brothers		1,000

BALATA.

NOV. 23.—By the *Maraval*=Trinidad:

Eggers & Heinlein	900	
Middleton & Co.	800	
Frame & Co.	300	
De Sofa Labo & Co.	1,100	3,100

DEC. 2.—By the *Maracaibo*=La Guayra:

John Boyd, Jr. & Co.		2,500

DEC. 5.—By the *St. Louis*=London:

Poel & Arnold	8,000	
Earle Brothers	2,200	10,200

FROM OTHER SOUTH AMERICAN PORTS.

November 24.—By the steamer *Seguranca*, from Mollendo:

Chicago Bolivian Rubber Co.	7,000	.....	.....	.....	7,000

November 24.—By the steamer *Philadelphia*, from La Guayra:

Thebaud Brothers	2,000	.....	.....	.....	2,000

December 22.—By the steamer *Seguranca*, from Mollendo:

Chicago Bolivian Rubber Co.	3,500	.....	.....	.....=	3,500

CUSTOM HOUSE STATISTICS.

PORT OF NEW YORK—NOVEMBER.

	POUNDS.	VALUE.
Imports:		
India-rubber	4,399,695	$2,955,592
Gutta-percha	22,285	9,152
Gutta-jelutong (Pontianak)	2,311,312	64,232
Total	6,683,292	$3,028,976
Exports:		
India-rubber	134,414	$103,641
Reclaimed rubber	36,202	8,728
Rubber Scrap Imported	1,122 497	67,478

BOSTON ARRIVALS.

	POUNDS.
NOV. 18.—By the *Sachem*=Liverpool:	
George A. Alden & Co.—Fine Para	3,849
NOV. 18.—By the *Canadian*=Liverpool:	
Poel & Arnold.—African	2,260
NOV. 24.—By the *Cestrian*=Liverpool:	
George A. Alden & Co.—African	2,049
NOV. 30.—By the *Kansas*=Liverpool:	
Poel & Arnold.—African	9,165

BOSTON ARRIVALS—Continued.

	POUNDS.
NOV. 30.—By the *Kansas*=Liverpool:	
George A. Alden & Co.—Centrals	12,502
Total	29,765
[Value, $15,672.]	
GUTTA-PERCHA.	
NOV. 20.—By the *Cambrian*=London:	
Robinson & Tallman	2,404

NOVEMBER EXPORTS OF INDIA-RUBBER FROM PARA (IN KILOGRAMS).

EXPORTERS.	UNITED STATES.					EUROPE.					TOTAL
	FINE.	MEDIUM.	COARSE.	CAUCHO.	TOTAL.	FINE.	MEDIUM.	COARSE.	CAUCHO.	TOTAL.	
Adelbert H. Alden	65,108	19,405	102,396	788	187,697	161,420	7,840	41,107	4,445	214,812	402,509
Frank da Costa & Co.	98,189	7,572	156,551	—	262,312	80,278	3,738	28,756	—	112,772	375,084
Cmok, Schrader & Co.	32,640	2,720	64,160	—	99,520	200,260	13,940	39,220	15,862	269,282	368,802
Neale & Staats	8,568	1,008	79,632	—	89,208	54,432	3,024	—	—	57,456	146,664
Kanthack & Co.	9,005	846	2,614	—	12,465	16,646	2,570	3,632	117	22,965	35,430
Singlehurst Brocklehurst & Co.	—	—	—	—	—	22,159	2,543	9,429	62	34,193	34,193
J. Marques & Co.	7,818	361	1,399	—	9,578	17,492	1,059	5,832	—	24,383	33,961
R. Suarez & Co.	—	—	—	—	—	20,013	4,822	3,477	1,350	29,662	29,662
Denis Crouan & Co.	10,710	340	16,640	—	27,690	—	—	—	—	—	27,690
Pires, Teixeira & Co.	14,616	—	1,605	—	16,221	—	—	—	—	—	16,221
Sundry small shippers	—	—	—	—	—	1,725	140	4,902	—	6,767	6,767
Direct from Itacoatiara	—	—	—	—	—	1,562	—	447	—	2,009	2,009
Direct from Manáos	615,824	138,524	115,443	10,422	880,213	321,220	61,384	61,501	28,939	473,044	1,353,257
Direct from Caballo Cocha	—	—	—	—	—	54,020	2,555	14,129	1,677	72,381	72,381
Direct from Iquitos	—	—	—	—	—	132,163	5,867	44,436	55,689	238,155	238,155
Total for November	862,478	170,776	540,440	11,210	1,584,904	1,083,390	109,482	256,868	108,141	1,557,881	3,142,785
Total for January-October	5,515,792	1,295,323	3,998,476	1,090,265	11,899,856	7,005,052	926,106	2,064,545	2,711,756	12,707,459	24,607,315
TOTAL SINCE JANUARY 1	6,378,270	1,466,099	4,538,916	1,101,475	13,484,760	8,088,442	1,035,588	2,321,413	2,819,897	14,265,340	27,750,100

OFFICIAL STATISTICS OF CRUDE INDIA-RUBBER (IN POUNDS).

UNITED STATES.

MONTHS.	IMPORTS.	EXPORTS.	NET IMPORTS.
October, 1903	3,597,057	375,026	3,222,031
January-September	42,898,398	2,583,197	40,315,201
Ten months, 1903	46,495,455	2,958,223	43,537,232
Ten months, 1902	41,290,317	2,816,659	38,473,658
Ten months, 1901	45,120,538	3,250,775	41,869,763

GREAT BRITAIN.

MONTHS.	IMPORTS.	EXPORTS.	NET IMPORTS.
October, 1903	5,676,832	3,436,832	2,240,000
January-September	39,249,168	28,900,592	10,348,576
Ten months, 1903	44,926,000	32,337,424	12,588,576
Ten months, 1902	38,779,776	26,096,336	12,683,440
Ten months, 1901	42,992,768	27,125,280	15,867,468

GERMANY.

MONTHS.	IMPORTS.	EXPORTS.	NET IMPORTS.
October, 1903	2,668,380	878,460	1,789,920
January-September	25,848,020	8,873,040	16,974,980
Ten months, 1903	28,516,400	9,751,500	18,764,900
Ten months, 1902	27,540,920	11,475,640	16,065,280
Ten months, 1901	23,818,300	8,902,520	14,915,780

ITALY.

MONTHS.	IMPORTS.	EXPORTS.	NET IMPORTS.
October, 1903	168,300	3,300	165,000
January-September	1,117,820	123,420	994,400
Ten months, 1903	1,286,120	126,720	1,159,400
Ten months, 1902	1,162,700	107,360	1,055,340
Ten months, 1901	1,250,920	189,640	1,061,280

FRANCE.*

MONTHS.	IMPORTS.	EXPORTS.	NET IMPORTS.
October, 1903	1,441,660	792,440	649,220
January-September	11,754,160	6,826,600	4,927,560
Ten months, 1903	13,195,820	7,619,040	5,576,780
Ten months, 1902	13,277,000	8,326,340	4,950,660
Ten months, 1901	13,593,300	8,601,120	4,992,180

AUSTRIA-HUNGARY.

MONTHS.	IMPORTS.	EXPORTS.	NET IMPORTS.
October, 1903	263,340	2,200	261,140
January-September	2,137,080	20,460	2,116,620
Ten months, 1903	2,400,420	22,660	2,377,760
Ten months, 1902	2,179,320	12,320	2,167,000
Ten months, 1901	2,207,480	25,080	2,182,400

BELGIUM.†

MONTHS.	IMPORTS.	EXPORTS.	NET IMPORTS.
October, 1903	2,544,414	1,268,320	1,276,094
January-September	11,405,095	9,326,698	2,078,397
Ten months, 1903	13,949,509	10,595,018	3,354,491
Ten months, 1902	12,690,944	10,062,939	2,628,005
Ten months, 1901	12,727,880	10,977,762	1,750,118

NOTE.—German statistics include Gutta-percha, Balata, old rubber, and substitutes. French, Austrian, and Italian figures include Gutta-percha. The exports from the United States embrace the supplies for Canadian consumption.

*General Commerce. †Special Commerce.

ned.

POUNDS.
12,502
29,765
2,404

TOTAL
402,509
375,084
368,802
146,664
35,430
34,193
33,961
29,662
27,690
16,221
6,767
2,009
1,353,357
72,381
238,155
3,142,785
94,607,315
97,750,100

IMPORTS.
240,000
348,576
588,576
683,440
867,468

IMPORTS.
165,000
994,400
159,400
055,340
061,280

IMPORTS.
261,140
116,620
377,760
167,000
182,400

mmerce.